

Railway Age Gazette

SECOND HALF OF 1916—No. 16.

SIXTY-FIRST YEAR

NEW YORK: Woolworth Building
CHICAGO: Transportation Building

NEW YORK—OCTOBER 20, 1916—CHICAGO

CLEVELAND: Citizens Building
WASHINGTON: Home Life Bldg.



“UNDER-FRAME”

AND

SAFETY FIXTURES

THE SUCCESSFUL ELECTRIC LIGHTING SYSTEM FOR RAILWAY CARS

THE SAFETY CAR HEATING & LIGHTING CO.

Chicago, Philadelphia, St. Louis,

2 Rector Street, New York

San Francisco, Montreal, Boston

SARCO MINERAL RUBBER ASPHALTS

SARCO No. 6 Waterproofing
SARCO Bituminous Putty
SARCO S-M Paint
SARCO Refrigerator Compound

SARCO Mineral Rubber Floors
SARTAC-Damp-Proofing
SARCO R. S. A. Specifications
SARCO Roof Cement

SARCO PRODUCTS INSURE PURITY AND RELIABILITY

Promptness—Service—Efficiency

STANDARD ASPHALT & RUBBER CO. CHICAGO, ILL.

DICKINSON DEVICES

Cast Iron Smoke Jacks
Light Fire-Proof Smoke Jacks
Ventilators All Materials
Cast Iron Chimneys
Cast Iron Buildings
Telephone Booths

PAUL DICKINSON Inc., 3346 South Artesian Ave., Chicago

SNOW PLOWS AND FLANGERS

Also single and double truck caboose cars for steam railway service.

RUSSELL CAR & SNOW PLOW CO.,
Ridgway, Pa.

Eastern Agents
Wendell & MacDuffie
61 Broadway, New York City

Western Agents
The M-C-B COMPANY
McCormick Bldg., Chicago

"Be sure you're right—then go ahead." It's the same in placing your advertising. If you want to cover the railway field, your medium should be the

RAILWAY AGE GAZETTE

PANTASOTE

The National Standard for car curtains and car upholstery. Twenty years' service tests have established its superiority to any other curtain material.

AGASOTE

For car headlinings and interior trim. A homogeneous waterproof board of great density and tensile strength. It will not warp, blister or separate.

FIREPROOF AGASOTE

Non-conductive qualities of heat and cold make it peculiarly well adapted for headlining and interior trim for steel fireproof passenger cars, entirely eliminating the disadvantage of steel for interior trim and giving the appearance of wood finish.

THE PANTASOTE COMPANY

11 Broadway, New York Peoples Gas Building, Chicago
797 Monadnock Bldg., San Francisco

THE PENN COUPLER

Our latest development of the M. C. B. Coupler, a modification of our popular Pitt and Janney X Couplers, with latest improvements.

LOCK-TO-THE-LOCK, LOCK-SET, and KNUCKLE OPENER

SEND FOR BLUEPRINTS AND PRICES

Manufactured Only by

THE McCONWAY & TORLEY CO., PITTSBURGH PA.

GOLD CAR HEATING & LIGHTING CO.

ECONOMICAL—SYSTEMS OF MERIT—WILL NOT FREEZE

VAPOR
SYSTEMS

PRESSURE
SYSTEMS

VAPOR AND PRESSURE
SYSTEMS

HOT WATER
SYSTEMS

ELECTRIC
SYSTEMS

AUTOMATIC HEAT CONTROL FOR ALL SYSTEMS—VENTILATORS

17 BATTERY PLACE, NEW YORK

**CHASE GOAT BRAND PLUSHES AND CHASE IMITATION LEATHER**

Quality standards are fixed and dependable

Several months ago a seat cover of Chase Plush was sent to us with the statement that it had been in continual service for twenty-four years.

L. C. CHASE & CO.

89 Franklin Street, BOSTON. 326 W. Madison Street, CHICAGO. 321 Fourth Avenue, NEW YORK. 303 Majestic Bldg., DETROIT

Railway Age Gazette

Volume 61

October 20, 1916

No. 16

Table of Contents

EDITORIALS:

Train Dispatchers as Officers.....	677
Improvement in Acoustics.....	677
Quantity vs. Quality in Shop Output.....	677
A Record Car Shortage.....	678
The Railways and President Wilson.....	679
*Missouri Pacific	680
*Western Maryland	682
*Southern Railway	683
*Boston & Maine.....	684
Hocking Valley	686

NEW BOOKS:.....	686
-----------------	-----

LETTERS TO THE EDITOR.

A Plan for Preventing Strikes.....	687
Train Dispatchers as Officers; J. L. Coss.....	687
A Protest to American Railroad Executives.....	688

MISCELLANEOUS.

*The United States Forest Products Laboratory.....	689
Mail Pay Controversy Renewed; H. F. Lane.....	691
American Association of Passenger Traffic Officers.....	693
*An Easy Running Package Freight Truck.....	694
*Locomotive Fuel Economy and Boiler Design; J. T. Anthony.....	695
Baltimore & Ohio Safety and Sanitation Rules.....	700
Railroad Securities Held Abroad.....	700
Meeting of Railway Real Estate Association.....	701
Why the Intercolonial Railway Is a Failure.....	703
The Congressional Investigation of Railway Regulation.....	704
Convention of Maintenance of Way Master Painters.....	705
*Belt Rail Applied to Union Pacific All-Steel Automobile Cars.....	707
*A New Flooring.....	707
GENERAL NEWS SECTION.....	708

*Illustrated.

The letter, in another column, from a train despatcher who is *not* anxious to sign his own name to the train orders which

Train Dispatchers as Officers

he issues, suggests a point which is suggested by all letters on this subject, but which usually is not expressed. It is this: to regularly sign his name to the orders that he issues, makes a man more truly feel the importance of his office (as he should). He makes the order; and it is the normal thing for the real maker of a document to put his own name to it. And, supposing that it is admitted that the usual despatcher's plea is based largely on something akin to vanity; should that throw him out of court? Some wise man has observed that vanity is found in the make-up of many worthy people; and that often it is harmless. Vanity in the railroad world is not confined to the despatching forces. It is legitimate to recognize this personal feeling. If such feeling did not exist where should we look for the ambition that leads men to fit themselves for higher places? But the common practice of signing the superintendent's name promotes good system and tends to simplify the conductor's part. To use three different names in 24 hours looks like unnecessary variety. How would it do to say, on the timetable, that the despatcher's name, within his sphere, should have equal authority with that of the superintendent? That would afford an opportunity to experiment with the proposition.

One phase of the operation of large passenger stations wherein there is still room for material improvement is in the announcing of trains. While train signs or bulletin boards are provided in most cases to supplement the spoken announcement and although more rigid supervision in recent years has been instrumental in securing more conscientious articulation on the part of the callers, it is still frequently difficult for travelers to grasp more than fragments of the announcements. This is, however, not entirely the fault of the speaker. In fact, the trouble lies more often in the acoustics of the great waiting room or concourse; the

human voice, or the enunciators which now replace it in many cases, are made unintelligible by a confusion of echoes or reverberations. Except in the case of theatres or auditoriums, acoustics seems to be overlooked as a requirement of the design of structure, æsthetics being given much more consideration even though its relation to utility is more remote. The results as a rule are therefore indifferent or unsatisfactory. For this reason it will be of interest to those who have been confronted with these conditions to read of the results obtained in correcting the echoes and reverberation in the auditorium of the University of Illinois as described in Bulletin No. 87 of the Illinois Experiment Station. These improvements were secured entirely by a treatment of the wall surfaces of the finished building. While the requirements of this structure differ materially from those of the passenger station and although the work done was experimental rather than commercial, the data secured ought to be of value in the design of new structures or in the correction of old ones.

The general custom is to rate a back shop according to its output, and the shop superintendent, or whoever is in charge

Quantity vs. Quality in Shop Output

of the shop, generally becomes greatly worried toward the end of the month if it appears that the record of the month before, or of the corresponding month last year, is not going to be met. Of course it is the duty of every shop to get the locomotives back into service as quickly as possible, but that should not mean that the repairs must be hastened to the extent that the workmanship is poor. The broad-minded mechanical officer will not think so much about the output of his shops as he will about the service rendered by the locomotives after they come out of the shop. The time saved in rushing the engines through the shop may more than be lost by holding them out of service in the roundhouse for running repairs and the ultimate cost for repairs will be greater. At the same time the transportation department will have less reliable power with which to meet the traffic demands. The cost of repairs per locomotive mile for each and every locomotive would be a more

true indication of the service rendered by the mechanical department and a better measure of its efficiency. If any comparisons are to be made between back shops, or any records are to be kept and lived up to, they should be those which include the performance of the locomotives after they leave the shop. An individual account of each and every locomotive should not be difficult to maintain, and an analysis of these accounts would locate weak shop organizations.

A RECORD CAR SHORTAGE

THE monthly statistical statement of the American Railway Association Committee on Relations Between Railroads, giving a summary of freight car surpluses and shortages as of September 30, shows a larger shortage than has appeared at a corresponding date in any of the ten years during which these statistics have been compiled. The net shortage is 61,030 cars, distributed about proportionately among all classes of cars.

The total surpluses on September 30, 1916, amounted to 26,201 cars, compared with a total of surpluses on September 1 of 45,044 cars, and with 88,341 on October 1, 1915. The total shortages on September 30, 1916, were 87,231, compared with 64,917 on September 1, and with 10,010 on October 1, 1915.

There has been a general increase throughout the country in shortages of all classes of freight car equipment. The surpluses and shortages by classes of cars are as follows:

Classes	Surpluses	Shortages	Net shortages
Box	12,863	45,879	33,016
Flat	1,687	3,655	1,968
Coal and gondola	5,640	25,512	19,872
Miscellaneous	4,811	7,446	2,635
Not classified	1,200	4,739	3,539
Total	26,201	87,231	61,030

A feature which differentiates the present shortage from those that have occurred in previous years is brought out by a comparison of the present shortage by classes of cars with the shortage of 1907 arranged in similar detail. On October 2, 1907, there was a net shortage of all classes of freight cars, and the aggregate net shortage was within 3,000 of the aggregate net shortage on September 30, 1916. In 1907, however, of a total shortage of 58,276 cars, 43,136 of the total were box cars. In 1916, the total net shortage of 61,030 cars includes only 33,016 box cars. The other principal component of the total is a net shortage of 19,872 coal cars and gondolas. The figures in detail are as follows:

CAR SHORTAGES AND SURPLUSES, OCTOBER 2, 1907			
Classes	Surpluses	Shortages	Net shortages
Box	2,393	45,529	43,136
Flat	570	3,280	2,710
Coal and gondola	2,062	10,019	7,957
Miscellaneous	1,168	5,641	4,473
Total	6,193	64,469	58,276

It is a curious fact, also, that the gross shortage of box cars in each of the two years is almost exactly the same; but the net shortage of box cars in 1916 is reduced by a surplus of almost 13,000 cars.

The relatively large number of coal cars and gondolas which help to make up the net shortage in 1916, and the relatively small proportion of box cars, point out at once what is perhaps the principal cause of a shortage this year. Coal cars and gondolas have been the classes of cars principally employed in the transportation of coal and ore to the large manufacturing plants. It is probable, also, that a material part of the box car shortage is due to the demand for such cars in the transportation of manufactured products from the factories to the ports for export. The whole condition is therefore somewhat different from that which has controlled

in previous years and deductions based upon the precedents furnished by previous years may go wrong.

This net shortage of 61,030 cars is worth consideration from two points of view. It is true that it is the largest net shortage reported for this date during the ten years in which the American Railway Association has compiled these figures. The figures for a substantially corresponding date in each of the preceding years, since and including 1907, are as follows:

CAR SHORTAGES AND SURPLUSES, 1907 TO 1916			
October 1	Surplus	Shortage	Net shortage or surplus
1907.....	6,193	64,469	58,276 shortage
1908.....	133,792	8,114	125,678 surplus
1909.....	53,388	14,582	38,806 surplus
1910.....	42,469	17,941	24,528 surplus
1911.....	58,382	8,344	50,038 surplus
1912.....	26,754	44,547	17,793 shortage
1913.....	41,994	31,620	10,374 surplus
1914.....	133,382	2,355	131,027 surplus
1915.....	88,061	9,762	78,299 surplus
1916.....	26,201	87,231	61,030 shortage

For the reason that it is the largest net shortage at this time of the year, the greatest possible effort should be put forth in the way of cutting out unnecessary delays in movement, in seeing that cars are loaded to full capacity, and in exercising moderation in requisitioning cars for loading.

On the other hand, a certain feeling of relief may be entertained that the shortage up to date is no worse. The peak of the demand for cars ordinarily comes in October or November. In previous years the maximum net shortages were reached on these dates: October 30, 1907, 86,811 cars; November 10, 1909, 3,286 cars; November 7, 1912, 51,269 cars; and October 15, 1913, 6,048 cars. These are the only years during the life of these records when net shortages have occurred.

It is, of course, well understood that the reason for shortages occurring in October or early in November, if they occur at all, is that that month generally represents the period of heaviest grain movement. Somewhat paradoxically, this year it is the grain movement that has in part occasioned the shortage and at the same time kept the shortage from being worse than it is. On account of abnormal conditions prevailing in other countries there was a large early movement of grain by rail. There has also been a special demand for cars for other purposes, especially coal cars and gondolas. This created a demand for cars which afforded premonitions of a shortage earlier in the season than symptoms of shortage ordinarily appear. The net result of the early grain movement, however, was to afford relief for the condition of which it was a symptom. The extraordinary demands for equipment to carry other material would not have existed but for abnormal conditions abroad.

But an outgrowth of the same cause that brought about the earlier movement of grain in 1916 reacted to slow down the movement later. The demand for grain for export coupled with a partial deficiency in the crop resulted in prices for some grains, particularly wheat, soaring to an unprecedented height. Many farmers are only now marketing their wheat at \$1.50 a bushel and many of them are still holding their supply for \$2.00.

On the whole, then, this incipient shortage may be regarded with mixed feelings, notwithstanding the necessity of putting forth every effort to prevent it from growing to more serious proportions. It has been said before by the *Railway Age Gazette*, that a car shortage is not all bad, because it is an unmistakable evidence of transportation prosperity. It is particularly so when by reason of unusual conditions the body of traffic that tends to cause a shortage is spread over such a period that the maximum of business may be handled with the minimum of disturbance. And under these conditions the precautions that are to be taken to prevent a threatened shortage from becoming a serious matter can be taken calmly and effectively with but little effort upon the part of each responsible individual.

THE RAILWAYS AND PRESIDENT WILSON

CLEARLY the railways are out of politics. Judge Lovett, chairman of the Union Pacific System, has prepared a statement which has been given out from Democratic campaign headquarters, indicating that in spite of the course adopted by President Wilson and Congress in dealing with the recent railway wage crisis, he intends to vote for Mr. Wilson. President Underwood of the Erie also has prepared a statement which has been issued by the Democratic committee, in which he says that he believes President Wilson "used his best judgment in the railroad negotiations for an eight-hour day."

Many, and probably a large majority, of the leading railway executives disagree with Judge Lovett and Mr. Underwood. In other words, the injection of the wage controversy into the political campaign has not been sufficient to align the heads of the railways, either as individuals or in behalf of their companies, on the side of either Mr. Wilson or Mr. Hughes.

The situation as respects the leaders of organized labor is entirely different. The president of the American Federation of Labor and the heads of the four railway labor brotherhoods, which recently "held up" Congress, have all announced themselves in favor of Mr. Wilson, and are openly working for his re-election. The heads of the brotherhoods have expressly said that they are taking this course because of the policy Mr. Wilson and the Democratic congress pursued in dealing with the wage controversy.

The contrast presented is striking. Not only does it show that the railways are out of politics, but it also illustrates how deeply the leaders of organized labor are in politics. It must be said in all fairness that in many respects President Wilson has been just and friendly to the railways. It is understood that he helped materially in securing the increases in passenger and freight rates, which the Interstate Commerce Commission has allowed within the last two years. He also recommended to Congress more than once the passage of the Newlands resolution providing for a general investigation of the entire subject of railroad regulation, and probably it was chiefly due to his influence that that resolution was passed. But the railways are confronted with other problems besides those directly growing out of the regulation of their rates and facilities. The most important and serious of these other problems is the labor problem. In no other class of industry in this country has organized labor acquired such enormous power as in the railway industry, or used it with such selfish and reckless disregard of the rights and welfare of capital, of unorganized labor and of the public. If Mr. Wilson and those who passed the Adamson law are re-elected, the result will be regarded by organized labor and by most of the public as a great victory for the labor unions, and especially for those whose members are employed on the railways. This clearly would not bring the labor problem on the railways any nearer to a solution.

Mr. Wilson has indicated that he will use his influence and that of his administration to secure any increase in freight rates that may be reasonable to offset the increase in expenses caused by the establishment of an eight-hour basic pay day in railway train service. He has also indicated that he will use his influence to secure the passage of a law to provide for compulsory investigation of labor controversies affecting train service before lockouts or strikes can occur. Finally, he has appointed a commission of most excellent personnel to investigate and report on the operation of the Adamson law.

Unfortunately, however, Mr. Wilson has made a record during his administration which renders it difficult to regard with optimism the course he may be expected to take in any case where organized labor is affected. One of his first acts as President was to appoint as Secretary of Labor William B. Wilson, a leader of union labor, who in every act of his

official life has indicated that he is not concerned as to the welfare of any class of persons who do not belong to labor unions. Then Congress passed and President Wilson signed a measure prohibiting the Department of Justice from using any part of the fund for anti-trust proceedings in suits brought against labor organizations. This was followed by the passage of a provision of the Clayton act expressly exempting labor organizations from the anti-trust law.

Two years ago a controversy arose between the western railways and their engineers and firemen. The men made certain demands upon the railway companies. The railways made counter-demands. The engineers and firemen came back with still further demands. When this controversy got into the hands of President Wilson he insisted upon the railways withdrawing all of their demands and agreeing to arbitrate only the original demands of the men. Finally there came the dispute over the eight-hour basic day in train service. The employees made demands upon the railways and the railways made certain contingent proposals in reply. It was thought by railway officers that it was possible that the President might ask the roads to withdraw their contingent proposals and to arbitrate only the demands of the employees, but it was felt that it was improbable that he would do this, and that for him to do so would be most unfair. He went vastly farther than this. He insisted that the railways should concede the principal demand of the employees—that for the eight-hour basic day—on the ground that the eight-hour day was not arbitrable, and that other matters in controversy should be investigated by a commission to be appointed by himself. He did this in spite of the fact that he himself had signed the Newlands act which expressly provides for arbitration of hours of labor. When the railways declined his proposition he went to Congress with a program including the passage of an eight-hour basic pay day law and a law to provide for compulsory investigation of disputes, but he did not insist upon the latter, and the only bill finally enacted was one to increase the wages of the employees in train service.

This is President Wilson's labor record to date. He has never failed in a single instance since he has been President to yield completely to any demand which organized labor has made, however unreasonable and outrageous that demand has been. It is significant, in this connection, that although organized labor is resolutely opposed to legislation to provide for the compulsory investigation of labor disputes on railways, and although Mr. Wilson has said that he favors it, organized labor is not showing the least alarm at his attitude, and Mr. Gompers and the heads of the four railway labor brotherhoods are vigorously advocating his re-election.

The question inevitably arises as to what value any system of railway regulation can have if the government is to follow the course favored by Mr. Wilson in this railway wage dispute. There was a law for the arbitration of such disputes which Mr. Wilson himself had signed. He absolutely ignored it. The anti-trust law formerly applied to conspiracies of labor as well as to conspiracies of capital in restraint of trade and commerce. Mr. Wilson signed a bill to repeal that law as it applied to organized labor. Might he not act similarly with reference to a law for the compulsory investigation of labor disputes if the leaders of the brotherhoods did not happen to like it and threatened to strike if it were not repealed?

As to an increase in freight rates to offset the increase in operating expenses that will be caused by the operation of the Adamson law, we note that Judge Adamson, the author of that law, says that there will be no increase in expenses because the railways will merely run their trains faster and that therefore no advance in rates will be necessary. Judge Adamson is chairman of the House Committee of Interstate and Foreign Commerce. He is the man who rose in his place in the House of Representatives on July 21 and announced

that there would be no railway strike—that he had conferred with the leaders of organized labor and they assured him that they would not “stop the wheels.” Mr. Adamson’s logic in regard to the probable operation of the law that bears his name is just about as reliable as was the information he gave the country on July 21 as to the attitude of the labor leaders. If that kind of logic is going to prevail in Congress, as did the statement he made on July 21, those who hope for legislation to give the railways relief in respect to rates are doomed to disappointment.

As a matter of principle ought there to be any such legislation? It has never been determined whether the train service employees ought to be given the increase in wages contemplated by the Adamson law, and there is nothing in the law to require the Goethals’ commission to ascertain this. If train service employees ought not to have their wages raised, then upon what ground can it be contended that special legislation ought to be passed to provide the means for paying them an increase in wages? The suggestion that Congress should take some action looking to an increase in rates to offset the increase in railway expenses which would be caused by the establishment of a basic eight-hour day originated with Mr. Wilson, and is as open to criticism as everything he did in connection with the wage controversy. It would be perfectly proper to provide by law that the Interstate Commerce Commission in regulating rates should take into consideration every wage award made by an arbitration board after due investigation. It would also be perfectly proper to provide by law that the Interstate Commerce Commission itself should arbitrate railway labor disputes, and should in its decisions in rate cases take into consideration the awards made by it in labor disputes.

The same thing cannot be said for legislation passed by Congress providing that the Interstate Commerce Commission, in the regulation of rates, shall take into consideration an advance in wages voted by Congress without investigation. The day that Congress begins to pass special legislation for the benefit of particular classes of persons and to require the Interstate Commerce Commission in the regulation of rates to take this special legislation into consideration, on that day the destruction of fair and intelligent regulation of railways in this country will begin. In many of the states the legislatures have created commissions to regulate rates and then subsequently have themselves passed laws to reduce rates. The spokesmen of the railways have denounced the legislatures for doing this. Is it any worse in principle for state legislatures to disregard the commissions that they have created and pass laws arbitrarily reducing rates, than it would be for Congress to begin passing laws practically requiring the Interstate Commerce Commission to grant increases in rates for the benefit of favored classes of railway employees? The same Congress that can pass laws to provide for increases in rates for such reasons can pass laws to provide for the reduction of rates for no reason at all.

Both Mr. Wilson’s action in getting the Adamson law passed, and his further action in recommending special legislation looking to increases in rates to offset the increases in railway expenses which he foresaw would be caused by the Adamson law, tend to the destruction of the system of fair and intelligent railway regulation. Of what value will any arbitration law be if the national administration does not firmly stand for its full use and observance? Of what value will be any system of federal regulation by commission however wisely contrived if Congress and the President are going to make a practice of giving the commission detailed and special instructions as to how it shall perform its functions?

The question raised by the present administration’s uniform course in dealing with organized labor, by its course in respect to the railway wage controversy and by the passage of the Adamson law raise an issue which in importance vastly transcends any issue directly affecting the railways that ever was presented for the consideration of the American people.

If we are to have such regulation of railways as we have had in this instance the system of private ownership and management subject to public regulation cannot possibly endure. Such regulation will speedily deprive the opponents of government ownership of every valid argument in favor of private ownership and management. Wherever government management has been a failure its failure has been chiefly due to the injection of politics into it. There never was a case in any country where the public owns the railways in which politics was more flagrantly injected into their management than has recently been the case in this country. One of the strongest arguments against government ownership has been that when railway employees were taken into the service of the government public officials would bestow favors on the employees in return for their votes, and the employees would give public officials their votes in return for these favors. Is not that exactly what is happening right now in the United States under private ownership?

Let us not close our eyes to plain facts, or try to deceive ourselves as to their meaning. Mr. Wilson’s course heretofore, where organized labor has been concerned, has been such that all reasonable hope that in future where it is concerned he will not sacrifice the rights and welfare of the American public for its benefit must be predicated upon the assumption that his future course with respect to organized labor will be directly the opposite of what his past course has been. Every step taken by him and Congress in dealing with the pending railway wage controversy has been a violation of the most fundamental principles of sound regulation of railways and the most vital principles of orderly democratic government. The leaders of organized labor evidently expect to have the same influence in the affairs of government as long as he is President as they have had heretofore. Business men, and especially railway officers, who in these circumstances can repose confidence in Mr. Wilson’s wisdom and fairness, have the faith that passeth understanding.

MISSOURI PACIFIC

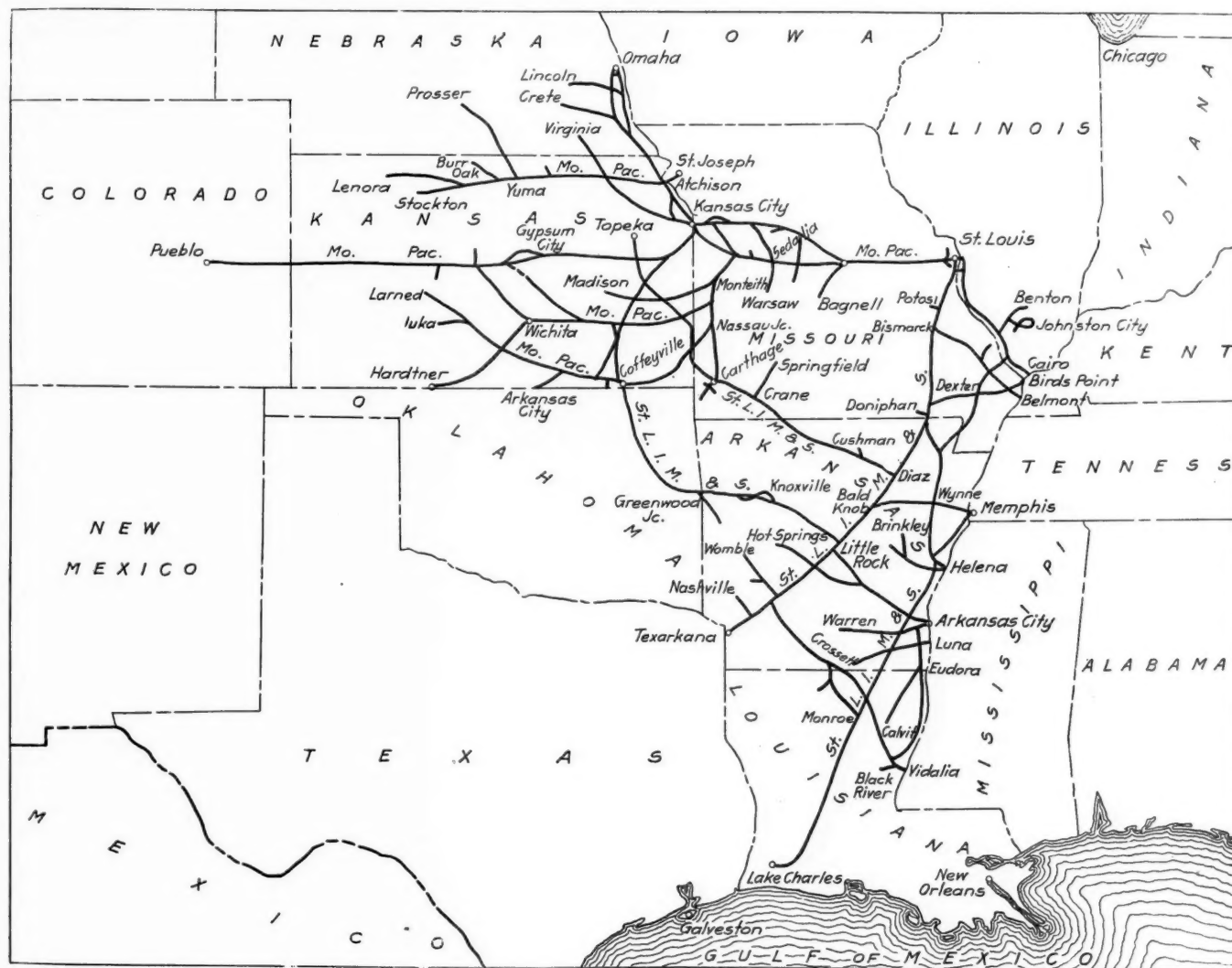
THE deficit of the Missouri Pacific in its year of heaviest business—the fiscal year ended June 30, 1916—was even larger than in the previous year; but there is nothing surprising in this fact, nor is it any indication of economics of operation. It was purely the result of the pursuit of the policy adopted by the receiver of taking up deferred maintenance. The total number of tons carried one mile in 1916 was 7,433,000,000, an increase of 12.85 per cent, and the total number of passengers carried one mile was 502,000,000, an increase of 1.89 per cent as compared with the previous year, while transportation expenses (the out-of-pocket cost of handling freight and passenger business) amounted to \$20,487,000, a decrease of about half of one per cent as compared with the previous year.

The appointment of a receiver for the Missouri Pacific took place in August, 1915. B. F. Bush, president of the company, was appointed, so that there was no change in management. A change took place, however, in the policy of the management in regard to maintenance. Maintenance of way and structures in 1915 cost \$8,142,000, while in 1916 \$10,589,000 was spent on this account. Maintenance of equipment in 1915 cost \$10,769,000, while in 1916 \$13,956,000 was spent on this account. This is an increase of over 30 per cent in expenditures for maintenance of way, and nearly 30 per cent in expenditures for maintenance of equipment. In some part the increase in maintenance of way was due to extraordinary expenses occasioned by floods in Missouri Pacific territory following the northward progress of the great Galveston storm. But this would not explain the increase in maintenance of equipment expenditures, nor would it greatly lessen the significance of some of the details of maintenance of way expenses. Roadway maintenance, which includes care of roadway, general cleaning, watching

roadway, and bank protection, was more than twice as large in 1916 as in 1915, the total in 1916 being \$1,776,000, an increase of \$891,000 over the previous year. There was \$362,000 spent for ballast in 1916 as against \$95,000 in 1915. All of the charge for ballast in maintenance of way accounts is supposed to be for renewing ballast where ballast had previously been in existence. It is pretty safe to assume that some of the maintenance of way expenses for ballast on the Missouri Pacific were for renewing ballast that was supposed to have been in existence for a long, long time.

A total of \$7,018,000 was spent for repairs of freight cars in 1916 as compared with \$4,805,000 in 1915, an increase of \$2,214,000. A few years ago it was probably a

been mentioned. The average trainload of all freight was 524 tons in 1916, an increase of 41 tons, or 8.39 per cent. There were no locomotives added in either 1916 or 1915. The operating department was helped a little, it is true, in 1916 by a little better balanced traffic, the percentage of loaded car-miles to total car-miles being 69.84 in 1916 and 67.68 in 1915. In great part, however, the saving came in a rigid holding down of every small item of expense connected with the movement of trains and a noteworthy reduction in payment for loss and damage to freight and injuries to persons. The total payments for loss and damage to freight in 1916 amounted to \$556,000, a decrease of \$320,000 as compared with the previous year, and for injuries to persons, to



The Missouri Pacific System

fact, although no records were kept at that time by which it would be easy to prove it, that less than 3 per cent of freight cars in service on the Missouri Pacific had a general overhauling once a year. Under the present regime it is understood that about one-seventh of all the freight cars in service are given a thorough general overhauling each year. The great increase in 1916 as compared with 1915 may in part have been due to the interpretation of a "general overhauling" which the management permitted the car department. All that has been said in regard to maintenance may be summed up by saying that apparently the management is taking advantage of the receivership to pay back to the property deferred maintenance and to bring the standard of the property up to that of some of its competitors.

The reduction in transportation expenses, notwithstanding a considerably heavier business handled, has already

\$477,000, a decrease of \$150,000 as compared with the previous year.

The following table shows the ratio of each class of operating expenses to total operating revenues:

	1916	1915
Maintenance of way and structures.....	16.45	13.99
Maintenance of equipment.....	21.68	18.50
Traffic expenses	2.48	2.43
Transportation expenses	31.83	35.35
General expenses	2.39	2.55
Other expenses	0.18	0.29
Total	75.01	73.11

The consolidated income account of the receiver and the old company shows a deficit in 1916 of \$1,340,000. As a matter of fact, however, there was a total of \$4,536,000 interest charges which were not paid by the receiver, so that no receiver's certificates were necessary, the cash taken in from earnings being a little more than sufficient to pay oper-

ating expenses, including the much heavier maintenance expenses, and interest on underlying bonds. Cash on hand at the end of the year amounted to \$610,000, a decrease of \$506,000 as compared with the previous year, and loans and bills payable amounted to \$1,140,000, a decrease of \$510,000.

The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916	1915
Average mileage operated.....	7,341	7,285
Freight revenue	\$48,510,396	\$43,683,712
Passenger revenue	10,838,313	9,864,626
Total operating revenues	64,372,302	58,209,306
Maintenance of way and structures	10,588,678	8,141,892
Maintenance of equipment.....	13,956,176	10,769,047
Traffic expenses	1,595,954	1,417,094
Transportation expenses	20,486,767	20,576,420
General expenses	1,538,413	1,484,807
Total operating expenses.....	48,284,016	42,559,670
Taxes	2,852,480	2,552,429
Operating income	13,176,761	13,053,640
Gross income	14,574,110	14,156,814
Net deficit	1,340,222*	1,240,546

*This is after the bookkeeping deduction of \$4,536,492 interest charges which were not actually paid by the receiver.

WESTERN MARYLAND

THE Western Maryland board of directors is actively considering a readjustment of the company's financial affairs so as to end what is really, although not technically, a friendly receivership. The Western Maryland has \$10,000,000 secured and \$6,000,000 unsecured notes now outstanding which are in default as to interest since January 1, 1915, and as to principal since July 1, 1915. The greater part of these notes are owned or controlled by the same interests which control the board of directors of the Western Maryland and technically no receivership has taken place. It ought not to be a very difficult matter to make the necessary readjustment on a basis which will be satisfactory to security-holders. Very wisely, it would seem, the Western Maryland has set its operating house in order before undertaking financial readjustment. So far as can be seen now the splendid showing which was made in the fiscal year ended June 30, 1916, is but the beginning of what may be expected.

In this last fiscal year the company, operating 689 miles of road, earned \$10,930,000. This is an increase over the previous year of \$2,247,000. There was an increase of only \$782,000 in operating expenses, about half of which was in transportation expenses and half in maintenance, leaving an operating income of \$3,542,000, an increase over the previous year of \$1,422,000. There was a surplus after interest charges, including the unpaid interest charges on the defaulted notes, of \$540,000, as contrasted with a deficit in 1915 of \$908,000. With its present facilities the Western Maryland ought to be capable of earning over \$20,000 a mile—earnings in 1916 were at the rate of \$16,165, and in 1915, \$13,132. Not only are the facilities adequate for a much larger business, but active steps are being taken to secure it.

One of the most important of these steps is the development of terminal facilities at Baltimore and Port Covington. At Port Covington the company now has a grain elevator with a capacity of 1,900,000 bushels, and at Baltimore and at Port Covington the railroad company has secured connection with industries, some of them affiliated with the Standard Oil interests, which should give it a very considerable westbound business; and that is what the Western Maryland needs badly to be used in bargaining with the Pittsburgh & Lake Erie for eastbound business at Connellsville, Pa.

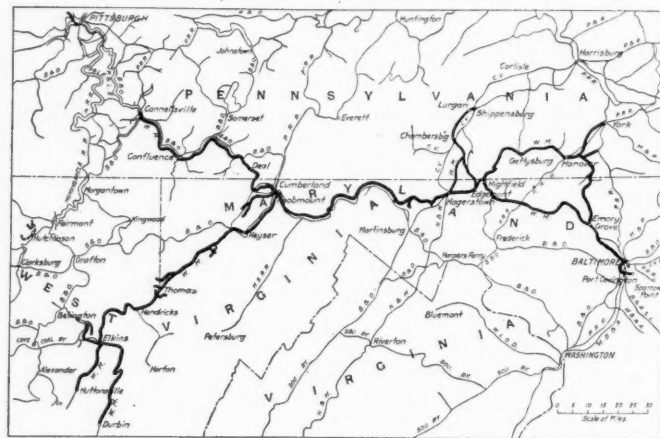
The Western Maryland is controlled by the same interests that now control the Consolidation Coal Company, and by the construction of new lines and negotiation of new agreements the Western Maryland is providing for what ought to be a large permanent increase in its coal traffic. The management is demonstrating in a quite conclusive way its ability to handle increased traffic on an increasingly economical basis. All of these things are important factors in the success which

ought to attend the reorganization of the company's finances.

The total tonnage of freight handled by the Western Maryland in 1916 was 15,378,000, comparing with 12,205,000 tons handled in 1915. In 1916 bituminous coal furnished 8,820,000 tons of traffic and in 1915, 7,412,000 tons. It will be noted that the proportion of coal tonnage to total tonnage was less in 1916 than in 1915. On the other hand, the total tonnage of manufactures carried in 1916 was 2,238,000, which was 14.55 per cent of the total tonnage carried and compares with 1,525,000 tonnage of manufactures in 1915, which was 12.49 per cent of the total tonnage in that year.

Notwithstanding the fact that the new grain elevator went into operation only in December, 1915, and the addition to it, which increased its capacity by 1,000,000 bushels, was not completed until September, 1916 (after the close of the fiscal year), the tonnage of grain handled by the Western Maryland in 1916 was 450,000, as compared with 77,000 handled in 1915. In the six and a half months during which the elevator was in operation 14,966,000 bushels of grain were received, representing 10,448 carloads and 33 small bay boats. There were loaded at the elevator during the year 127 vessels.

The average revenue trainload of freight in 1916 was 837



The Western Maryland

tons, an increase of 102 tons. This very remarkable increase in trainloading has been previously quite fully discussed in these columns. The average receipts per ton per mile in 1916 were 5.01 mills and in 1915, 5.24 mills. The average length of haul was 122 miles in 1916 and 116 miles in the year 1915.

The passenger business of the Western Maryland is not profitable. Average passenger-train earnings, including not only passenger fares but incidental earnings from passenger trains, is less than one dollar per mile, being 94.126 cents in 1916 as against 93.289 cents in 1915. The West Virginia authorities gave the Western Maryland permission to raise its intrastate rates from two to two and a half cents, but something further will have to be done if this branch of the service is not to continue to be a parasite.

The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916	1915
Average mileage operated.....	676	661
Freight revenue	\$9,386,082	\$7,326,471
Passenger revenue	952,741	948,777
Total operating revenues	10,930,369	8,683,459
Maintenance of way and structures	1,269,245	1,204,048
Maintenance of equipment.....	1,736,704	1,479,331
Traffic expenses	257,528	260,136
Transportation expenses	3,452,852	3,056,078
General expenses	245,436	229,063
Total operating expenses.....	7,039,608	6,257,412
Taxes	349,161	306,855
Operating income	3,541,670	2,118,258
Gross income	3,854,563	2,387,124
Net income	539,693	907,905*

*Deficit.

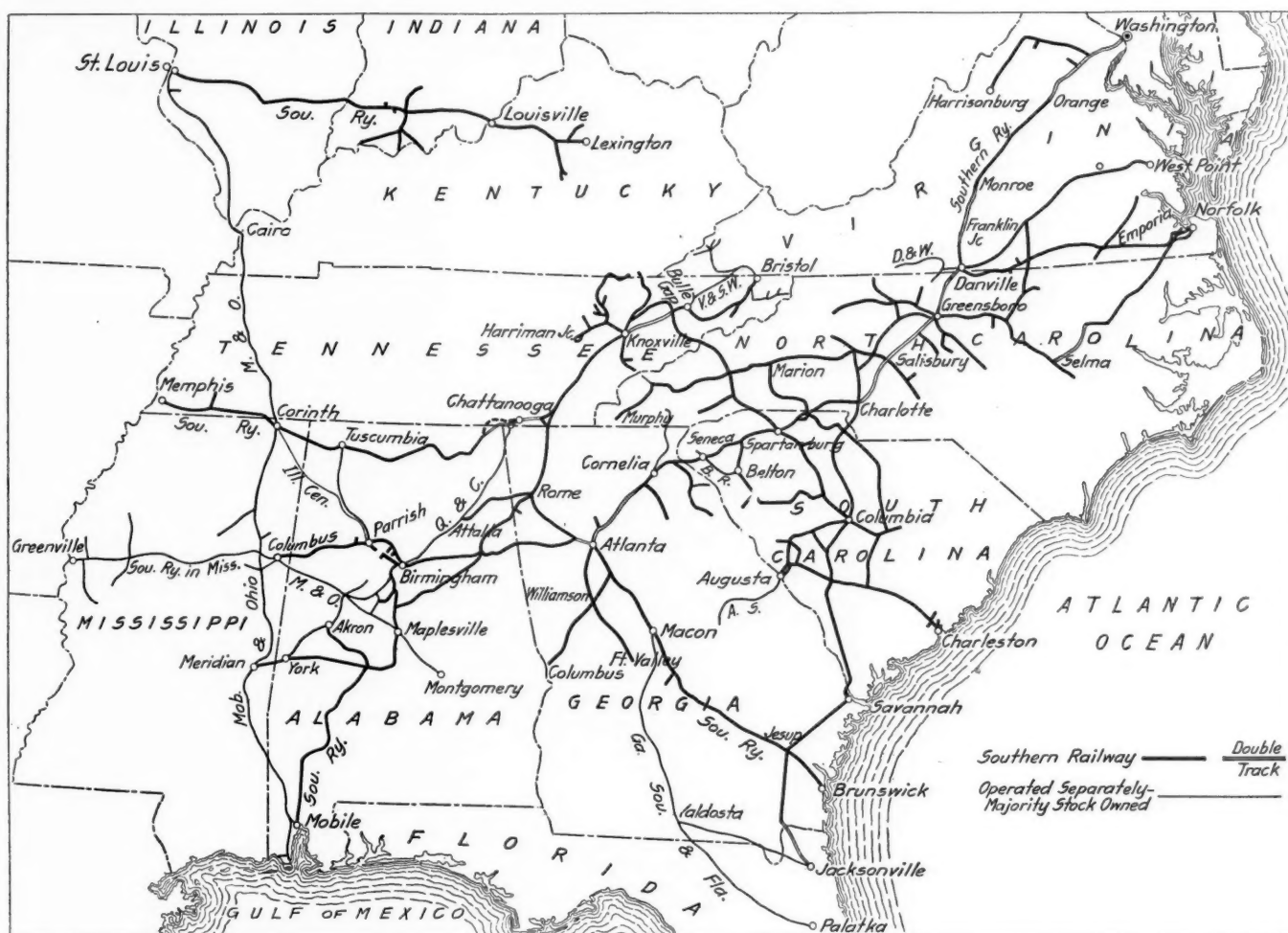
SOUTHERN RAILWAY

WHEN as much can be accomplished by the application of the fundamental principles of good railroading as has been accomplished on the Southern Railway in the last two years, no large railroad in this growing country seems hopeless. Expenses, cut drastically enough to meet an emergency such as was presented by the conditions in the South during the first year of the European war and the consequent demoralization of cotton prices, were, with the return of prosperity and with a freight traffic the greatest in the history of the Southern Railway cut still further, and the directors with a surplus of over nine million dollars refused to resume dividends on the preferred stock.

Total operating revenues in the fiscal year ended June 30, 1916, were \$69,998,000, an increase of \$7,798,000 over 1915, and only slightly less than the operating revenues of 1914 (\$70,751,000), which were the greatest in the history of the

still further reduction in 1916 was notwithstanding quite extraordinary expenses necessitated by a very severe flood in North Carolina in July. In all, 686 miles of railroad in North and South Carolina and Tennessee were put out of service by the storm and it was over a month and a half before the most badly damaged line—that between Asheville, N. C., and Salisbury—was in shape for the resumption of service.

The additional charges for operating trains under flood conditions should be borne in mind in comparing transportation expenses in 1916 and in 1915. The total ton mileage of all freight in 1916 was 6,298,000,000 an increase of 19.30 per cent over the previous year, and the passenger mileage was 783,140,000, an increase of 3.19 per cent. To handle this great increase in business there was an increase of only 3.44 per cent in freight train mileage and a decrease of 6.30 per cent in passenger train mileage. The average trainload of all freight was 442 tons in 1916, an increase of 15.52



The Southern Railway

company. Operating expenses in 1916 amounted to \$46,041,000, or \$134,000 less than in 1915, and \$5,720,000 less than in 1914. The reduction in expenses was the result of a saving of \$267,000 in the amount spent for maintenance of way and \$206,000 in the cost of solicitation of the traffic and a slight reduction in transportation expenses. There was an increase of \$492,000 in the amount spent for maintenance of equipment. The reduction in maintenance of way expenses and transportation expenses is truly remarkable. It is a fact, of course, that the Southern Railway management was not stampeded into making any uneconomically drastic cut in maintenance of way appropriations even in the fiscal year ended June 30, 1915, but a considerable reduction was made in 1915 as compared with 1914, and the

per cent over 1915, and nearly double the average trainload in 1908.

It was largely a combination of a detail scientific study of operating problems, especially branch line operation, and an inspiring of the operating organization with the vital necessity for making every effort to economize and to improve the service that resulted in the large reduction that was made in transportation expenses in 1915 as compared with 1914. The further very great reduction, measured in cost per ton-mile, made in 1916 is apparently the result of the further application of railroad operating science to the Southern's local conditions; a holding up of the organization to the standards of economy obtained, and the success of the efforts made to reduce the much worse than worthless ex-

penditures on loss and damage to freight and injuries to persons. Loss and damage to freight cost \$845,000 in 1916, a reduction as compared with the previous year of \$117,000, and injuries to persons cost \$642,000, a decrease of \$230,000 as compared with the previous year.

The gain in trainloading was helped by a smaller percentage of empty car-miles, the increase in loaded car mileage being 15.16 per cent and the decrease in empty car mileage, 7.30 per cent, but was not the result of any additions to the number of locomotives available. No new equipment was bought and received by the Southern in 1916, although contracts were made for 45 locomotives, 3,335 freight cars and 60 passenger-train cars. Maintenance of equipment expenses in 1916 amounted to \$11,184,000, an increase as compared with 1915 of \$492,000. At the beginning of the year the percentage of bad order freight cars to all freight cars owned was 11.65 per cent; at the end of the year it was 1.58 per cent. This latter figure is remarkably low and was the result both of a comprehensive program of repairing cars that needed repairs and of scrapping cars that were not economical to repair. It so happened that because of the high price of scrap, retirement charges were less in 1916 than in 1915, notwithstanding the fact that 1,259 more units of equipment were retired in 1916 than in 1915.

There was \$6,369,000 spent for additions and betterments to lines other than the Atlanta & Charlotte Air Line, on which \$2,556,000 was spent during the year for double track. This is part of the double track of the main line from Washington to Atlanta for which funds are being raised by the sale of first mortgage bonds of the Atlanta & Charlotte Air Line Railway Company. There was \$7,000,000 of these bonds sold during the year.

In this year's annual report of the Southern there is a table showing revenue and net revenue per mile of road on each of the ten main lines which, as President Harrison says, "constitute the backbone of the system." The Washington-Atlanta line, 663 miles long, the greater part of which has now been double tracked and grades reduced to five-tenths of one per cent and curves to a maximum of four degrees, earned in 1916 \$25,896 per mile and had an operating ratio of 57.33 per cent. The ratio of transportation expenses to revenue was 26.95 per cent. The main line from Atlanta to Birmingham—171 miles long—is typical of the old Southern Railway—1 per cent grades, 6 deg. curves, and with very little tangent or level line, all single track. In 1916 this line earned \$12,207 per mile; its operating ratio was 83.58 per cent, and its ratio of transportation expenses to revenue, 40.70 per cent. A careful study of further details of this table bears out irrefutably the wisdom of the expenditures for making a modern double-track railroad out of the Southern's main line from Washington to Atlanta.

The total tonnage of freight was 30,272,000 in 1916, an increase over the previous year of 4,376,000 tons. The large increase came in the tonnage of bituminous coal, which tonnage in 1916 amounted to 8,659,000, an increase of 1,224,000 tons. Of the total tonnage carried in 1916 only 11.86 per cent was furnished by products of agriculture as against 13.80 per cent in 1915, and of the total tonnage in 1916, 16.90 per cent was products of forests, and in 1915, 15.52 per cent. As President Harrison points out in his report, "It is a common fallacy to assume that the success of a railroad in the South depends upon the tonnage of raw cotton carried." Cotton is the cash crop of the South and the total price received for it is a measure of the prosperity of the territory. The earnings of the Southern Railway reflect actually and closely the prosperity of the region served. "Fifteen cent cotton" is what the South wants, with an expansion of its manufacturing and cotton raising industries.

In 1916 there were 684 new plants completed along the lines of the Southern Railway, representing an investment of \$35,245,000, which was in addition to a further investment

of \$16,889,000 in already established manufacturing plants.

It is interesting to note that the basing point system of rates which has been such a fundamental characteristic of the Southeast is being abolished under the direction of the Interstate Commerce Commission, and President Harrison says that "there is no evidence, after a trial of more than six months, of injury to any industrial or commercial interest. It is believed that with the completion of this work of reconstruction our people as a whole will be better satisfied than ever before with our system of rates." Every stockholder of the Southern Railway and every business man in the territory served by the Southern Railway ought to read President Harrison's letter of transmittal which accompanies this year's annual report. It is a frank, intensely interesting, perfectly simple rendering of an account of the management's stewardship of the property, with a free and inspiring expression of the hopes for the future of the Southern Railway and the people of the South that is absolutely unique in "financial" literature.

The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916	1915
Average mileage operated.....	7,023	7,031
Freight revenue	\$47,020,482	\$40,458,858
Passenger revenue	16,615,857	16,175,674
Total operating revenues.....	69,997,675	62,199,510
Maintenance of way and structures	8,175,411	8,452,119
Maintenance of equipment.....	11,183,701	10,691,267
Traffic expenses	1,904,129	2,110,467
Transportation expenses	22,751,698	22,757,597
General expenses	2,038,702	2,019,621
Total operating expenses	46,041,116	46,174,711
Taxes	2,916,427	2,595,828
Operating income	21,004,005	13,400,055
Gross income	24,426,031	16,638,972
Net income	9,333,899	1,600,557

BOSTON & MAINE

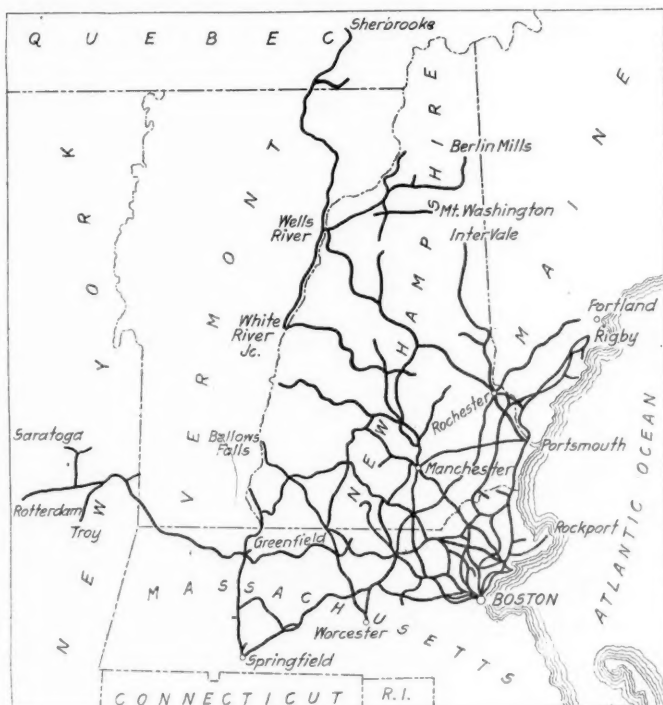
CONDITIONS affecting railroad operation were abnormal in New England in the fiscal year ended June 30, 1916, which accounts for the fact that the Boston & Maine in that year earned a surplus, after paying interest and rental charges, equal to nearly 10 per cent on its total stock outstanding. Since the close of the fiscal year the company voluntarily submitted to a temporary receivership. It has been recognized for more than two years that some readjustment of the Boston & Maine's finances was a necessity. If there was any hope that earnings would continue indefinitely in the future at as high a rate for the Boston & Maine as in 1916, it might be comparatively easy to make a readjustment which would be fairly satisfactory to everyone concerned; but even the most optimistic of Boston & Maine securityholders can hardly believe that the present rate of manufacture in New England and general prosperity can be counted on to continue year after year.

The total mileage of railroad operated by the Boston & Maine is 2,252, but of this only 708 miles is owned and the remaining 1,544 miles is leased. Interest on funded debt of the Boston & Maine amounts only to \$1,755,000 a year, but rent for leased lines amounts to \$5,626,000 a year. A considerable part of this rental is paid in the form of guaranteed dividends on stock of non-operating companies. The proposed reorganization plan would give the holders of this guaranteed stock Boston & Maine securities yielding the same rate of interest which they are now getting, but by making the property of these roads now leased a part of the assets of the Boston & Maine it would be possible to work out a scheme of permanent financing. It was the failure of all the interests involved, and especially of minority interests among the leased lines stockholders to agree to this plan, that made the temporary receivership necessary.

Total operating revenues for the Boston & Maine in 1916 were \$50,599,000, an increase as compared with the previous year of 11.22 per cent. Expenses increased by less than 1 per cent, so that after paying taxes the Boston & Maine had \$13,889,000 operating income, an increase of \$5,109,000 as com-

pared with the previous year. The interesting feature about the success with which the operating expenses were held down lies in the fact that although maintenance of way expenses were decreased by \$1,210,000 because of particular circumstances, the company was able to hold transportation expenses down to \$21,743,000, or only 7.84 per cent more than in the previous year while doing a freight business 22.12 per cent greater in 1916 than in 1915 and handling this business under quite extraordinarily difficult operating conditions.

The total tonnage of revenue freight carried in 1916 amounted to 26,497,000, an increase as compared with the previous year of 3,819,000 tons. Each class of commodities showed an increased tonnage, but the largest increases came in the tonnage of bituminous coal and of manufactures. The total tonnage of manufactures carried in 1916 was 5,970,000, or 22.5 per cent of the total of all tonnage carried. This is an increase of 1,273,000 tons over 1915, the 1915 tonnage of manufactures being 20.7 per cent of the total tonnage carried in that year. The tonnage of bituminous coal carried in 1916 was 3,232,000, or 12.2 per cent of the total tonnage carried. This was an increase of 528,000 tons over 1915. The tonnage of bituminous coal in 1915 formed 11.9 per cent of the



The Boston & Maine

total tonnage carried in that year. The average length of haul was 112 miles in 1916, an increase of a little over 5 miles as compared with the previous year. The average ton-mile rate was 1.079 cents, a decrease of 0.035 cent as compared with the previous year. Trainloading was probably helped some by the smaller proportion of empty cars. The average number of loaded cars per train in 1916 was 21.34, an increase of 1.04 per cent, and the average number of empty cars, 7.83, a decrease of 2.49 per cent. What help there was, however, from this source was probably more than offset by the difficulties due to congestion. Notwithstanding these difficulties the average trainload of all freight in 1916 was 381 tons, an increase of a little over 29 tons, or 8.32 per cent.

The Boston & Maine's passenger business is not profitable, and while the service has to be maintained—the passenger-train mileage in 1916 was 11,244,000, an increase of 1.52 per cent as compared with the previous year—the business and in even greater proportion the revenue from it is falling off. Total passenger-train revenue was \$17,790,000 in 1916, a decrease of about half of one per cent, and the passenger revenue from passengers only was \$14,782,000, a decrease

of over 3 per cent. The commutation business, as would be expected, is increasing, but it is in the local and interline business that the Boston & Maine is feeling the effects of automobile competition quite severely. The number of monthly ticket passengers carried (commuters) was 6,603,000 in 1916, an increase of 742,000, or 12.66 per cent. The number of local passengers, exclusive of monthly ticket holders, was 33,836,000, a decrease as compared with the previous year of 1,641,000. The number of interline passengers carried was 2,080,000 in 1916, a decrease of 44,000. The average revenue from monthly ticket holders per passenger-mile is but 6.53 mills. The average revenue per passenger-mile for local passengers, exclusive of monthly ticket holders, is 2.016 cents and for interline passengers, 2.248 cents. This is a decrease as compared with 1915 of 2.49 per cent for monthly ticket holders, 4.89 per cent for other local passengers, and 3.64 per cent for interline passengers. President Hustis says in his annual report:

"In the report of the Conference of Railroad Commissioners of New England, under date of November 24, 1913, in which Commissioner Prouty of the Interstate Commerce Commission concurred, the advisability of increasing passenger fares was suggested and the opinion was expressed that the statutes of the New England states which might interfere with a uniform treatment of this subject should be so modified that, if possible, some just rule applicable to all territory might be formulated. Acting upon these suggestions an effort was made to revise and standardize the passenger tariffs so as to effect a scientific rate schedule which would on the whole yield a greater revenue from that branch of the service but would involve certain reductions where the rates then in force were greater than the proposed standards. The plan as worked out, however, was, after hearings before the state commissions, modified in important details, so that the schedules as finally approved by the various commissions do not produce the expected, if indeed they produce any substantial increased revenues."

It is interesting to note that during the past three years the number of registered automobiles in the five states served by the Boston & Maine has increased on an average of 31 per cent a year. There is an automobile for every 34 persons in Massachusetts, for every 30 persons in New Hampshire, for every 39 persons in Maine, for every 32 persons in Vermont and for every 39 persons in New York.

The decrease of \$1,210,000 in maintenance of way expenses is not indicative of a policy of retrenchment in maintenance expenditures on the part of the management. The management was not able to spend as much money for maintenance as it wanted to, not because of lack of money but because of lack of labor and because of a strike of section men early in May. The 1915 maintenance expenses represented really two seasons' outlay. The policy of doing maintenance work as early in the spring as weather conditions would permit was adopted during that year, so that in the fiscal year ended June 30, 1915, there was the greater part of the maintenance expenses of the summer of 1914 and also of 1915. The same policy would have been pursued in 1916, insofar as doing the maintenance of way work early, if labor had been available. The demand, however, for unskilled labor in New England during the past year has far exceeded the supply, and as usual the railway companies are the chief sufferers. The 1916 maintenance expenses, therefore, had the normal proportion of the summer of 1915 expenses under the new policy but not of the summer of 1916.

Notwithstanding the fact that the present rate of earnings on the Boston & Maine cannot be expected to continue indefinitely, the fact that the company has had these large earnings and has succeeded in saving a large sum for surplus ought to make it easier for a reorganization to take place.

At the end of 1916 the company had \$8,443,000 cash. There are outstanding \$13,306,000 loans and bills payable. It is the necessity for permanently financing these loans and bills payable that was the immediate cause of the receiver-

ship, although the underlying cause was the failure of the minority interests to agree to the proposed plan of reorganization.

The table below shows principal figures for 1916 and 1915:

	1916	1915
Mileage operated	2,252	2,252
Freight revenue	\$31,963,489	\$26,912,397
Passenger revenue	15,028,317	15,502,197
Total operating revenues	52,075,428	46,673,049
Maintenance of way and structures	5,986,603	7,197,017
Maintenance of equipment	6,588,044	6,697,311
Traffic expenses	421,797	448,090
Transportation expenses	21,742,534	20,162,572
General expenses	1,238,292	1,188,851
Total operating expenses	36,197,958	35,909,772
Taxes	1,986,267	1,978,223
Operating income	13,888,578	8,779,110
Gross income	15,059,293	9,983,584
Net income	4,065,691	334,462*

*Deficit.

HOCKING VALLEY

THE Hocking Valley is controlled by the Chesapeake & Ohio, but, except as to general policy, its operation is under the direction of its own local officers. It operates only 350 miles of road, but this 350 miles is a very busy railroad. In 1916 the freight density (revenue tons carried one mile per mile of road) was 4,210,000. Total operating revenues amounted to \$7,412,000. The road runs from the coal fields in the neighborhood of Hocking, Ohio, north, through Columbus to Toledo. As explained in the comments in these columns on the Chesapeake & Ohio's annual report, the Hocking Valley will get a connection with the Chesapeake & Ohio by means of the new line—the Chesapeake & Ohio Northern—which is being built from near Portsmouth, Ky., to Waverly, Ohio, from which point the Chesapeake & Ohio has made arrangements for trackage rights over the Norfolk & Western to Valley Crossing, just south of Columbus, on the Hocking. This connection will presumably give the Hocking a very largely increased volume of coal traffic, and it is expected that it will be in operation by the opening of the navigation season on the Great Lakes.

In the fiscal year ended June 30, 1916, the Hocking Valley enjoyed its full share of the heavy business which the soft coal roads have been doing for more than a year now and handled the increased business without any increased facilities so economically as to have a net income available for dividends of \$1,082,000, or more than twice the amount available from the earnings of the 1915 fiscal year.

Total operating revenues in 1916 were \$7,412,000, an increase of \$1,230,000, or 19.9 per cent over the previous year. Total operating expenses amounted to \$4,954,000, an increase of \$769,000, or 18 per cent over the previous year. All but about \$100,000 of this increase in expenses was in the charges for maintenance of equipment. There was spent for repairs to freight cars in 1916 \$979,000, an increase as compared with the previous year of \$465,000. While there may have been some delayed maintenance to take up in 1916 in the repair of freight cars, in large part the increase this year as compared with last represents the thorough overhauling of a very considerable proportion of freight cars in service to put them in condition for handling the heavy traffic which will come with the opening of the connection with the Chesapeake & Ohio.

Transportation expenses amounted to \$2,137,000 in 1916, an increase of only 5.1 per cent. This increase contrasts with an increase of 26 per cent in the ton mileage of freight handled, the total in 1916 being 1,477,000,000. The number of passengers carried in 1916 was 1,414,000, a decrease of 4.9 per cent; but the average passenger journey was 31.49 miles, an increase of 5.8 per cent, so that the passenger mileage in the two years was about the same.

It is interesting to note that the total freight car mileage in 1916 was 65,589,000, an increase of 14.5 per cent over the previous year, accounted for by an increase of 19.3 per cent in loaded car mileage and 8.6 per cent in empty car mileage, so that the percentage of empty car mileage to total

was reduced to 42.2 per cent in 1916 as compared with 44.7 per cent in 1915.

The Hocking Valley gets a very low ton-mile rate on its coal, but for so short a road gets a long average haul. The ton-mile rate on coal in 1916 was 3.37 mills, a decrease of 2.6 per cent as compared with the previous year. The average ton-mile rate on all freight, including coal, was 4.06 mills, a decrease of 3.1 per cent as compared with the previous year. It is obvious that to secure an operating ratio below 70 with so low a ton-mile rate as this very large trainloads must be hauled. The average revenue trainload on the Hocking Valley in 1916 was 1,159 tons, an increase over the previous year of 124 tons, or 12 per cent. This is certainly a fine showing, more especially when we remember that there were no locomotives added during the year. There were \$4,000,-000 one-year 6 per cent notes refunded during the year by the issue of a like amount of two-year 5 per cent notes.

In the prosperous year 1916, with all the evidences that there are of strict economy and efficiency in operation, the total operating income was at the rate of only 6.24 per cent return on the property investment. This is not outstanding securities, it must be remembered, but actual investment in railroad property. In 1915, an unprosperous year, the return on the investment was only 3.90 per cent and the average for the past five years has been 5.57 per cent.

The table below shows principal figures for 1916 and 1915:

	1916	1915
Average mileage operated	351	352
Freight revenue	\$5,996,618	\$4,912,982
Passenger revenue	861,174	832,733
Total operating revenues	7,411,526	6,181,153
Maintenance of way and structures	728,178	707,207
Maintenance of equipment	1,814,110	1,158,671
Traffic expenses	99,747	110,916
Transportation expenses	2,137,472	2,033,491
General expenses	174,070	172,602
Total operating expenses	4,953,577	4,184,370
Taxes	501,752	418,522
Operating income	1,955,697	1,577,216
Gross income	2,347,709	1,839,853
Net income	1,081,766	493,402
Dividends	439,980	439,980
Surplus	641,786	53,422

NEW BOOKS

The Mechanical Handling and Storing of Materials. By George Frederick Zimmer, A. M. Inst., C. E. 744 pages. 7½ in. by 10½ in. Bound in cloth. Published by D. Van Nostrand Company, New York. Price \$12.50.

It has long been accepted as a fact that labor-saving devices as an aid to human endeavor are absolutely essential to progress. At no time has this been more particularly the case than at the present because of the ever increasing scarcity of labor. The treatise which Mr. Zimmer has written on this subject covers the field in a most comprehensive manner. The contents of the volume are arranged under two general divisions: The continuous handling of material and intermittent handling. The subject of continuous handling of materials is classified under three heads: (1) appliances for lifting in a vertical direction or from one level to another, commonly called elevators; (2) appliances for moving material in a horizontal direction, commonly called conveyors; (3) appliances which combine the two, elevating and conveying the material horizontally at the same time. No attempt is made to classify the intermittent handling of material under distinctive heads. The mechanical details of the many devices are discussed in full and concrete examples are given of the many advantages and economies resulting from their use. The volume also contains many descriptive articles describing the handling plants in operation. These articles are fully illustrated and are of especial interest as they show fully what has actually been accomplished under varied conditions. Mr. Zimmer's book is interestingly written and cannot fail to be of great interest and value to all who are in any way concerned in the economical and prompt handling of materials. The chapters devoted to coal and ash handling appliances, as well as those devoted to construction, are of especial interest to men in the railroad field.

Letters to the Editor

A PLAN FOR PREVENTING STRIKES

BUFFALO, N. Y.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The appalling situation in which the railroads of the country find themselves indicates that they can expect no help from the executive or legislative branches of the government. Possibly, they can still rely on the third co-ordinate branch—the judicial.

I offer the following suggestion as a means to curb the autocratic and tyrannical control of the brotherhoods by their irresponsible leaders: In hiring new men for the train service, or, for any service, if it is desirable to go to that extreme, let the antecedents and qualifications of the candidate be inquired into, the physical and medical examination, etc., be made as usual, and then require the applicant to execute the following contract precedent to giving him employment. It is not a contract obtained under duress. The applicant for the position is at perfect liberty to refuse to sign and to look elsewhere for a job. But, if he decides to enter the service of a public service corporation, he must recognize the fact that he has enlisted in an industrial army where his services are necessary to the well being of the public, and that he can no more desert his post than a soldier:

"In consideration of one dollar lawful money, well and truly paid to me in hand, and the receipt whereof is hereby acknowledged, and in further consideration of receiving employment as..... on the..... railroad, I do hereby agree to give up my right to strike in unison with other employees, although I am to be at perfect liberty to leave the service of the company as an individual at any time. In lieu of the right to strike, I hereby agree to submit my grievances and demands to arbitration under the so-called Newlands Act.

"Given under my hand and seal this day of, 191..., in the presence of the following witnesses.

"(Signed) E"

TRAIN DESPATCHERS AS OFFICERS

HAILEYVILLE, Okla.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE.

The article on the above subject which appeared in the *Railway Age Gazette* of September 8 again brings up an old, old question. The word "officer," as defined by Webster, may be interpreted in different ways by different people. A general superintendent of a railroad is an officer, yet at the same time his authority is curtailed by reason of the rules of the company and those of the general manager's office. A question might arise on which his judgment would prompt him to do one thing while the rules would force him to act in another direction. So with the train despatcher. Therefore, it does not seem reasonable to presume that the mere fact of the despatcher being invested with the authority to sign his name to train orders would give him any more prestige. The train order forms are all prescribed in the book of rules and approved by the management, and the despatcher is not allowed to deviate therefrom. His signature to the orders will not have any more effect on their being executed than if they were signed by the chief despatcher or the trainmaster. The despatcher's name on the order would not permit him to use any other forms nor could he take a single minute more of a passenger train's time.

In my opinion the train orders and all other documents issued under a superintendent's authority should be signed with the superintendent's name. The chief clerk signs that name to all office matters, some of which are as important as train orders, in a way. They would not become more effective if the chief clerk signed his own name to them.

At times, in cases of breakdowns or blockades, or some-

thing out of the ordinary, the despatcher may ask the chief despatcher or the trainmaster to give an opinion as to the handling of certain matters. If they inform him what in their judgment should be done, and he takes their advice, he would be signing his own name to something originated by the other fellow.

As far as I am personally concerned, it makes no difference whose signature is put on the orders. I can make just as good time orders and meeting points, and my brain will work just as well in deciding on some unexpected proposition regardless of whose name is signed to the orders.

In all of my experience as a trick and chief despatcher I have always been treated well by the officers. Of course, like all others, I have been associated with some minor officers who thought that the road could not run without them, but it did not take me long to work them over until they were good friends. If you run up against a "Smart Alec," whether he be an officer or what, there is a way to handle him, and make him like you; and at the same time make a permanent friend of him. Where there is discord with the trainmaster's and chief despatcher's offices the feeling extends further down the line. The trick men will take sides with this and that one, and then there is a bad humor throughout the entire force. The sooner such a condition is corrected the better for all concerned.

But the despatcher may be classed as an officer of the company, whatever name he attaches to train orders, and he should receive the same courtesies that other officers do in all directions. He should have Pullman transportation for himself and his wife over his own road and be able to secure it over other roads when going away. He should have express company franks, so that if he wants to make a few bargain purchases in the cities he won't have to pay transportation charges on them. When attending the train despatchers' annual convention he should be allowed full expenses while away, and he should be allowed to attend staff meetings occasionally, under the same arrangement. Of course, all despatchers cannot attend the same meeting, but one from each office can go, provided an arrangement is made for relief. The despatchers should also be allowed to make trips out on the road at certain intervals in order to keep up with the improvements and changes and to more fully keep in touch with road conditions. It is a good education to him to actually witness a big "saw" of freight and passenger trains at a congested station. Some few years ago while I was on the Missouri Pacific there was a rule in force that each despatcher must make a trip over his division every sixty days and make a full and complete write up of it; four copies, one for the chief despatcher, one for the trainmaster, one for the superintendent and one to be sent by the superintendent to the general superintendent's office. This gave the officers an idea of what kind of observers the despatchers were. Expenses were allowed on these trips and regular trips were compulsory.

So far as the item of transportation is concerned it is a well known fact that a large number of clerks both in and out of the general offices are provided with Pullman, steamship and almost any other kind of passes that can be mentioned. The lowest grade of traveling freight agent and most agents at large stations are furnished Pullman transportation, then why not the despatcher? If he is an officer there should be no distinction.

Every operating officer should agree with Mr. Clapp, superintendent of telegraph of the Northern Pacific, that when vacancies occur on a railroad all despatchers should have a chance at them. To a man who has been working at a small out-of-the-way place the chance to locate in a better town, or in some particular place in order to have the advantages of school for his children is a great benefit. This plan would afford the extra men a better chance to secure a regular job and would no doubt be the means of keeping

more good men on the road. As it is now, each division generally takes care of its own office. When a man is hired for a little extra work, he is let go when he is through, whereas, if the Northern Pacific system were in vogue no doubt this man could locate somewhere else on the road and eventually land a permanent job.

J. L. Coss.

A PROTEST TO AMERICAN RAILROAD EXECUTIVES

CHICAGO, Ill.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The article in your issue of September 15, on "The High Cost of Expediency," should impress railroad managers with the necessity of building for future needs; future needs, I mean, as regards organization and discipline, as well as in physical structures. How many presidents have read that article? Is it overdrawn? If so, it should not go unchallenged. If not, it certainly merits at least a few "amens" from the executives. Thousands, no doubt, of the loyal unorganized men are eagerly waiting for an expression indicating that the beginning of the end (of the discrimination in favor of the brotherhoods) is in sight.

Comparatively few roads have given this matter anything like the attention it deserves. The slipshod way in which most of them have handled the matter, is not fair to the few roads that have made the proper effort. It is not fair to the men themselves.

Take, for instance, the way the seniority clause in the agreements is handled by most roads. Generally speaking, all that a fireman or a brakeman has to do to get promoted to the position of engineer or conductor, is to hold on to his position until his seniority automatically lands him there, regardless of merit. The same procedure holds good, usually, for the more important or preferred runs, local freight, passenger, etc. Inability to spell the most common words, or to write half-way plainly; even gross illiteracy, will make little or no difference on most roads today; and a really hostile attitude toward the company and its officers many times proves no obstacle.

Everybody knows how this situation has been brought about. It is by general officers overruling local officers on pressure by the grievance committees. Many times this course is taken simply to avoid meeting the grievance committee—simply getting by today, regardless of the morrow. The result is that the men have gradually grown more arrogant toward the local officers; and these officers have done what any other set of men would have done under similar circumstances; they have given up the fight, because they had everything to lose. They could foresee increased loss of respect from the men and loss of chances of promotion on account of the continual stream of grievances.

The idea that men can be handled as so many pegs in a board is too absurd to admit of argument; and yet that is just what has been attempted, all over the country, in the actual working of the seniority clause.

When the grievors put up their grand bluff the general officers, rather than dig into the facts of each case, too often have seen fit to be good fellows, overruling the superintendent, the master mechanic and the trainmaster. Each time they not only have established a precedent, but have encouraged the men to bring a bigger budget next time. This is the way all of the arbitrary allowances and outrageous rulings referred to by your correspondent were put through. The movement very often was accelerated through the appointment to official positions of men from the ranks of the brotherhoods.

Too many general officers, in handling these matters with the grievance committees, act as though their own superior knowledge in the premises, must be accepted as the last word. If they do not have that idea, why do they not always have

the local officer present at all sessions with the grievance committee? In point of fact their eminence does *not* always give them a comprehensive survey of the whole field below. Their long distance glasses don't read far enough.

We seem to have all but lost sight of the fact that no man can rise to his best without the stimulation that accompanies competition. A man is not fit for promotion who does not feel that it is a reward of merit, and that he has earned it. Nothing could be more false than the prevalent idea among trainmen that a man can claim a certain job because it belongs to him; because he just happened to be there, and ready to fall into the dead man's shoes by right of succession. No man will make a decent approach to his own possibilities, who does not feel conscious at all times that his superior officer is watching him closely. It is essential that he realize that his advancement depends upon his application to duty, as well as his general conduct. The successful foreman or officer must not only command the respect of his men, in the ordinary sense; he must also be in position to command fear, sufficient to enable him to enforce this respect; and this commanding position has long since been taken away from the division heads by the general officers.

Am I putting the case too strong? I wish that could truly be said. The general officers have not only forced the local officers to continually yield to untenable and even outrageous demands, but have continued to do so themselves, until the brotherhoods have all but backed them off the board. To hold that the simple fact that the men have been given an agreement or contract presupposes such a hypothetical corollary is the most puerile superstition. The men in the ranks of the brotherhood are human, and in great measure are what we have made them. Environment counts, as everywhere else. The majority of these men will stand for a square deal, when they are given the opportunity, and are made to see that it pays. The grievance committees are all the time forcing reinstatement and other outrageous demands which the best of the men do not approve of. Not only this; these conservatives would never stand for such doings if the railroads would stand, and give them the chance to stand.

Power, as well as greatness, is best seen in perspective; the managements have shied away from the advances of the brotherhoods for so long, that their very shadow has been greatly magnified; metamorphosed into a great white ghost. What is the remedy?

General officers and executives must face the situation as it is. Make the local officer the big man that he was, generally speaking, 20 years ago (and is on a few roads now). If he hasn't the stuff in him, put in a man who has; men can be found. Be very careful in selecting men from the brotherhoods for official positions. In making promotions to the position of general superintendent or general manager, take fewer men on account of some spectacular feat, or bold front. Draw from the ranks those who, by their actual work, have proved their fidelity and all-around knowledge. This is a feature of railroad operation which is so fundamental and far reaching that it should engage the attention of the highest executive officers. May we not hope for more activity on the part of these officers as a result of their recent experience? That they have neglected the matter is evidenced by the fact that very, very seldom does one of them give expression to his views publicly on this present critical situation. That article—"The High Cost of Expediency" must arouse distressing reflections in the mind of many an ambitious, sincere officer, who realizes how the big men shy off from the subject. Won't some one speak out!

Truly, personality continues to be an offense, and for that reason my humble position forces me to simply sign this with my title. We small fish can not openly advocate a reform that evidently lacks the approval, or at least lacks the open support, of our superiors. A SUPERINTENDENT.

The United States Forest Products Laboratory

This Bureau Is Co-operating with the Railways in
Studies of Timber Preservation and Several Other Lines



ONE branch of the United States Government service which is carrying on a large amount of important research work for the railways and with which most railroad men are unfamiliar is the Forest Products Laboratory of the United States Department of Agriculture, which is maintained in co-operation with the University of Wisconsin at Madison, Wis. This laboratory was established about six years ago to co-operate with the producers and the consumers of wood and its products to promote the better and more economical use of timber. It has undertaken a large number of laboratory investigations, many of which have extended over several years. Several of these studies have been of direct value to the railways, while others have been of indirect but nevertheless important service to the roads during the creation of new traffic in materials formerly considered as worthless.

The laboratory occupies a large building of its own with track facilities to permit the delivery of materials at its door. It is in charge of a director with assistants in charge of the various departments. There is a total of about 100 employees.

The work of most direct interest to the railways has been that connected with the preservation of ties and the compilation of information concerning the service secured from treated and untreated timbers in tracks. The laboratory, co-operating with different railways, has installed 10 test sections of track, each about one mile in length, in different parts of the country. One new section was completed last year. These sections are laid with ties of different timbers treated with various kinds and amounts of preservations. These and other test sections installed independently by the railways are inspected annually by representatives of the laboratory and the roads interested. The laboratory is treating 200 ties each year with purely experimental materials and placing them in track for observation in the endeavor to discover substitutes for the preservative materials now in use. In these tests two new chemicals or mixtures are tried each year. Two mixtures of crude oil and creosote were employed in the ties treated last spring. Another chemical which is now receiving the attention of the laboratory in the preservation of ties is sodium fluoride. This material is available in large quantities at a present cost of 10c. per lb. as compared with 13c. for zinc chloride, while it is twice as toxic as the chloride. These prices, however, are abnor-

mal owing to the war. While no conclusions have yet been drawn, present indications are promising.

As an example of the information which has been derived from the test sections, that installed in the main track of the Chicago & Northwestern near Janesville, Wis., may be cited. At the time this section was placed in service about eight years ago the treatment of hemlock ties was not favorably considered by the trackmen in whose divisions the experimental ties were laid. Both treated and untreated hemlock ties are laid in this section and at the present time, although all of the untreated ties have been removed, almost all of those treated at that time are still in service. As a result of this and similar information, the use of hemlock for tie timber is increasing materially.

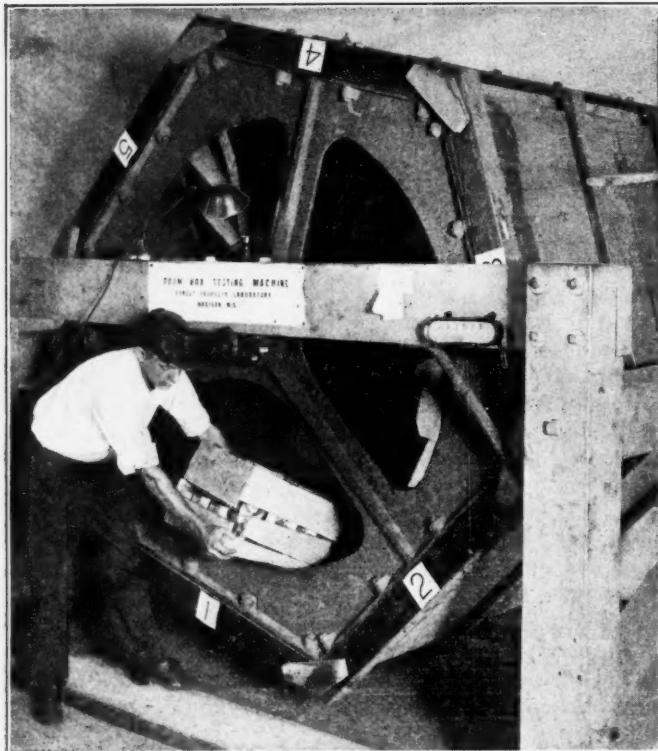
This organization is now completing a guide book on ties to assist a producer without technical knowledge of timber in the determination of the different kinds of woods and in their distinguishing characteristics. This is made possible by printed information and the liberal use of photographs. The purpose in preparing it is to furnish information scientifically correct, presented in terms with which the inspectors are familiar. This has involved investigations extending over a period of more than three years. Most of the information had to be prepared expressly for this purpose, as it was not available elsewhere. To transfer the information from the scientific terms into those intelligible to the timber inspectors, the author spent several months among these men in the field. After the manuscript was completed copies were sent to a number of representative inspectors for their criticism and suggestions. This book will be published in the near future.

The Forest Products laboratory has also conducted an extensive series of tests on long leaf pine piles. These piles have been submerged in waters infested with marine borers in the Gulf of Mexico and along the Atlantic Coast. As a result of the information secured in this way the laboratory is now in a position to draw up specifications for creosote oil for use in the treatment of piling to be placed in these waters to protect them against these insects. The creosote most suitable is that composed of the high boiling fractions mixed with from 10 per cent to 15 per cent of tar.

Experiments have also been conducted with mixtures of oil and metallic salts in an endeavor to reduce the cost of

treatment without impairing its value. The laboratory has co-operated with the Bureau of Fisheries in an extensive series of tests of piling subjected to the attacks of marine borers in the waters of the Southern Atlantic Coast. It was found in these investigations that it was entirely possible to kill these insects with the preservative when young and prevent them from entering the timber, but that when they had attained considerable size they would pass through treated timber apparently as readily as untreated. These experiments emphasize the necessity of injecting a sufficiently toxic oil into the surface of the timber to kill these borers before they attain any considerable size.

The development of standard grading rules for structural timbers has been of particular value to the railways as they are the largest users of this class of material. Co-operating with the American Society for Testing Materials, the Ameri-



The Box Testing Machine

can Railway Engineering Association and the Southern Pine Manufacturers Association, the laboratory conducted more than 130,000 tests on 113 species of American woods, as a result of which it was ascertained that the strength of this timber is proportional to the dry weight of the wood, following certain mathematical laws. This led to the preparation of grading rules for Southern pine, removing much of the uncertainty and confusion which had existed previously. Similar rules for Douglas fir are now practically completed and will soon be presented for adoption. These two woods comprise a large proportion of the materials used by the railways for structural purposes.

Experiments are also being made on the effect of treatment on the strength of Douglas fir. Early in the treatment of this material it was found that the strength was materially reduced by the ordinary process of treatment. At the present time careful consideration is being given to other methods of treatment to overcome this defect, with the result that the decrease in strength has been almost entirely overcome.

Careful investigations are being made on the kiln drying of timber. Following these investigations a kiln was installed for the drying of car lumber at the Norfolk & Western shops at Roanoke, Va., two years ago, which is working out very successfully. In this kiln all three essential conditions

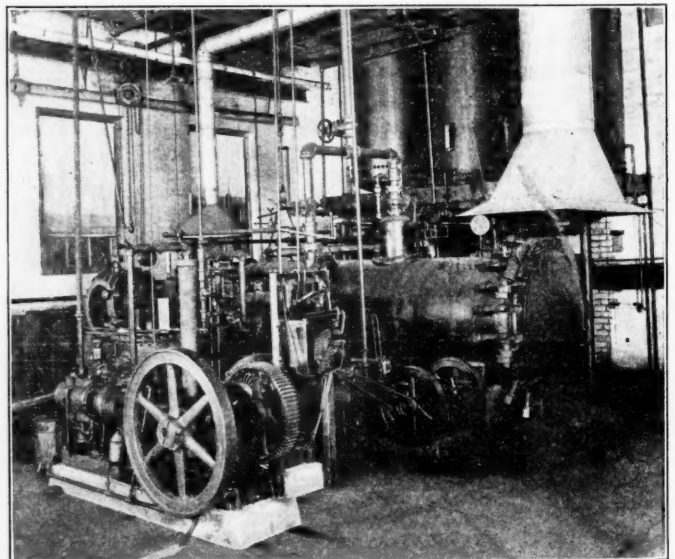
—temperature, humidity and circulation—are brought under direct control of the operator.

Only about 31 per cent of the volume of the materials of the forest is now used. This not only results in a very large waste of materials, but places a heavy burden upon those parts used as they must carry the entire manufacturing and overhead expenses. This has led to investigations to develop uses for the materials previously discarded. In this the laboratory works closely with the industrial departments



The Fire Investigation Laboratory

of the railways. As an instance, the European war has led to a large demand for dye materials. The laboratory found that Osage orange-wood contains valuable materials of this character and commercial tests in the use of this material in dyeing leather and woollens have given highly satisfactory results. Arrangements were therefore made with large manufacturers of extract materials in Massachusetts to undertake the manufacture of these dyes from the Osage orange-wood, which is available in large quantities in Okla-



A Portion of the Timber Preservation Laboratory

homa. At the present time over \$1,000,000 worth of these dyes are now produced annually and the railways have secured the hauling of this wood as well as of the finished dyes.

At the present time Wisconsin is the seat of many of the large paper mills of this country. The timber adjacent to these mills is now largely cut-off and they are forced to go into Minnesota and Canada for their raw materials. The

laboratory has made a large number of studies of other woods and found them suitable for use in paper making, particularly woods in the Northwest and hopes to make these accessible to Wisconsin manufacturers. This will create a traffic of over 200,000 cords of timber annually. This matter has already been presented to the railroads and they have been asked to make rates which will permit the materials to be moved in this way.

Over \$30,000,000 is paid annually in settlement of claims for freight lost or damaged in transit. Much of this results from the poor construction of shipping containers. To cooperate in the reduction of this loss the laboratory is conducting an extensive series of experiments to ascertain the most economical form of box construction and has formulated a series of tests to determine the strength of boxes and of various woods and types of construction. Over four and one-half billion ft. of lumber, or 12 per cent of the total cut, is required annually for boxes. One of the interesting developments of these tests has been the inadequacy of the common methods of nailing boxes. For instance, it has been found that seven nails driven in the end of a box instead of five, treble its strength. It has also been shown that the addition of two more nails enables the thickness of the timber to be reduced 1/16 in. and the cost to be reduced 10 per cent.

The ultimate object of these tests is to secure information which will enable specifications for boxes to be prepared which the roads can adopt and in this way standardize containers and reduce claim bills.

MAIL PAY CONTROVERSY RENEWED

By H. F. Lane.

WASHINGTON, D. C., October 18, 1916.

The long-standing controversy between the railroads and the post office department regarding railway mail pay was transferred to the Interstate Commerce Commission last week by a dispute at the outset as to the meaning of the provisions of the new post office appropriation law. This provides for a test of the space basis of payment on certain routes to be selected by the postmaster general, with the consent of the Interstate Commerce Commission, and prescribes rates per car mile to be applied during the test, but refers to the commission the ultimate determination as to both the rates and the basis of payment.

The railways contended that the law contemplates that the test shall be made for the purpose of furnishing information to the commission and should be conducted under its supervision, while the post office department proposed to conduct the test in its own way first and let the commission investigate it afterward.

The commission heard oral arguments at Washington on Saturday, October 14, on a petition filed by attorneys for the Committee on Railway Mail Pay, asking that the commission issue orders prescribing, among other things, that the post office department shall weigh the mails before it begins the test of the space system, as well as during the tests, so that when the commission comes to investigate the relative merits of the two methods in accordance with the law, it will have some comparative data before it.

The postmaster general places so much confidence in the plan of paying the railways on the basis of car space, with the privilege of loading as much mail into the space as it will hold, that he not only proposed to install the test for an indefinite period on practically all the railway mail routes at once, but he did not think it even necessary or worth while to keep a record of the weight of the mails carried.

To the petition of the railways the post office department replied that the roads had confused the jurisdiction of the commission with the administrative authority of the post-

to ascertaining the fair rates to be paid for the service.

The railways, having in mind that the commission's decision, both as to the rates and the basis of payment, is to apply from the date of the beginning of the test, urged that it would be well for the commission to know how much mail was being transported as well as the number of cars and the amount of space used. The petition points out that on August 29, on an ex parte application of the postmaster general, the commission gave its consent and approval to the installation of the space plan and rates on certain routes over which mails are transported, and that the "certain routes" covered by this application constitute those on which accrues approximately 98 per cent of the compensation paid to the railroads for the carriage of the mail. It is stated that the only purpose for which the postmaster general is authorized to install the space system before the final determination by the commission of the proper rates and basis of payment, or for which the commission is authorized to give its consent, is for the purpose of affording such test as may be necessary to secure the accumulation of information pertinent to the decision of the issues by the commission, and that the law provides and contemplates that, except to that extent and for that purpose, existing methods of payment shall continue. It is stated that the representatives of the railways were informed at a conference with the second assistant postmaster general on October 4 that the department does not intend to provide any contemporaneous weighing or to keep contemporaneously any statistics, other than a bare record of the space used for the purpose of ascertaining the compensation, until some indefinite date in the future, probably the spring of 1917. Before the installation of the space system the railways insist that there should be for a period of 30 or 35 days a daily weighing of the mails under the present method, accompanied by a record of the space occupied, the service performed and such other statistical information as the commission may require after conference with the parties, or after hearing. It is pointed out that in the New England and eastern section there has been no weighing of the mails since 1912 and 1913, since which time the principal development of the parcel post has taken place, and that in no section of the country are the last weighings taken indicative of the mails now carried.

The commission is also asked to prescribe, after hearing the parties, the period during which the space test should be applied.

Under the proposed plan of the postmaster general, the petition states, the carriers are expected to perform many services, such as carrying the mails between trains and post offices, not provided for in the space system, which the postmaster general is only authorized to install experimentally and for which no payments are provided. It is also stated that the postmaster general's plan ignores any test on closed pouch routes and is, therefore, deficient as a test of the operation of the space system.

"In order to make a complete demonstration of the results of the space system," the petition says, "it is not necessary that it should be adopted as a mode of payment to continue pending the decision and its adoption as a mode of payment is, therefore, contrary to the act."

The New York, New Haven & Hartford also filed a petition asking for a weighing of the mails on its system not later than November 1. The road had received a letter dated September 21 from the second assistant postmaster general announcing the selection of 37 of its routes to be placed on the space basis on November 1, leaving 21 routes on the weight basis. It had also received a notice from the superintendent of the railway mail service on August 30, announcing the discontinuance of the weighing of the mails in the eastern division of the first section, which includes its lines, although the last weighing in that division was taken in the fall of 1912. The railroad contends that it is entitled to a weigh-

in of its mails this fall under the plan of weighing the mails every four years.

After the railways had learned, somewhat indirectly, of the plans for installing the space system and the mail traffic managers had been informed of some of the details at a conference with Second Assistant Postmaster General Praeger on October 4, representatives of the Committee on Railway Mail Pay held a conference in the office of Commissioner McChord on October 6, at which a representative of the post office department was also present, as a result of which the petition was filed with the commission on October 10. A reply was filed on October 13 by Joseph T. Stewart. On Saturday morning F. H. Wood, representing the mail pay committee, and Mr. Stewart held another brief conference with Commissioner McChord and a hearing before the commission was arranged to be held in the afternoon.

The railways were represented at the hearing by Ralph Peters, chairman of the Railway Mail Pay Committee, the advisory committee of counsel, and by a number of mail traffic managers. F. H. Wood presented the argument, saying that the commission's consent to the adoption of the space plan was given before the commission had taken jurisdiction of the case by issuing its order instituting a proceeding of inquiry and investigation and that the railroads had thought that it should have prescribed the conditions for the test before giving its consent. He said the law contemplated that the postmaster general should file with the commission a comprehensive statement giving in detail the methods and conditions under which the mails were to be transported, which should also be served upon the railroads, and that the test should then be conducted for the information of the commission and under its supervision, thereby avoiding endless controversy between the railroads and the post office department as to the facts on which the commission's decision would rest. He pointed out that the Bourne commission had found a discrepancy of 23 per cent between the figures of the railroads and of the department as to the amount of space used and that it had accepted those of the railroads. He said that the plan proposed by the department contemplated a radical change in the method of paying the railroads, in the guise of a test, and that it also contemplated a contraction of the amount of space used by curtailing the frequency of the service and a rearrangement of routes so that mail would be taken from one railroad and routed over another. Therefore, the period during which the test should be conducted should be limited by the commission, especially as the department had stated in its answer that it proposed to limit the statistical period to 30 or 35 days. Mr. Wood argued that the postmaster general now has such control over the physical handling and routing of the mails that he could rearrange the service in any way necessary to demonstrate the efficiency of the space basis without changing the basis of pay.

Mr. Stewart began his reply by questioning the authority of the mail pay committee to speak for the roads, saying it was "unknown to the government except in a most general way" and that he knew some of the roads were in favor of the space plan. He also questioned the jurisdiction of the Interstate Commerce Commission to interfere with the administration of the post office department, saying the law required the railroads to perform the service under the conditions prescribed by the postmaster general, while guaranteeing them fair and reasonable compensation by leaving the decision as to the rates and basis of pay to the Interstate Commerce Commission. He said that it was necessary for the department to put the new plan into effect for a time before it could properly present to the commission the comprehensive statement required, which it expected to have ready by about January 1 and which would probably be the most elaborate statement ever filed with the commission. Afterward the comparative statistics of space and weight would be taken.

It would be impracticable to take them first he said, and would cost \$500,000. Several of the commissioners asked how they could be expected to determine the issues unless they had comparable statistics of both space and weight taken at the beginning of the experiment. Mr. Stewart said that comparisons could be made for the "interim" period with the weights ascertained at the last weighings.

Mr. Wood asked if it were not the intention to make material changes in the service. Mr. Stewart replied that it could not be said that no changes would be made; that it was the purpose of the department to accomplish "large economies" in the conduct of the service under the new plan by a more economical use of the available space, but that the service would go on "without much change."

The information received by the railroads as to the proposed changes in the service indicates that there may be some protests from the public. Orders have been issued in a number of instances for the consolidation of the mails now handled on two trains into one car, thereby reducing the service, and also for a reduction in the amount of sorting of the mail en route in order to save space, thereby delaying the distribution of the mail.

R. Walton Moore has been added to the advisory committee of counsel representing the mail pay committee.

THE ADAMSON LAW

Although President Wilson has continued for some time to refrain from bragging of the particular "triumph of diplomacy" by which he was able to legislate an increase in wages to the highest paid working men in the country at the ultimate expense of all other working men, there have been few signs of the disappearance of the issue from the campaign which was predicted a few days ago by Senator Hughes. The Democratic orators seem to have lost some of their enthusiasm for the subject, but the non-partisan heads of the labor organizations are carrying on the work with great activity. The chief executives of the brotherhoods, who had been announced as the chief speakers at a mass-meeting of the Wilson Eight-Hour League in Washington on October 13, did not appear, but they were ably represented by Samuel Gompers, president of the American Federation of Labor, who lauded President Wilson, and the Adamson law, attacked Charles E. Hughes, and then bade his hearers to "go and vote as their consciences dictated." He said that he has always kept himself free from partisan politics and went away without even telling his audience how he proposed to vote. Newspaper reports do not quote him as replying in any great detail to the criticisms of the law made by Mr. Hughes in his speeches, nor as discussing the President's plan for completing his legislative program by securing a law to prevent strikes until after a public investigation has been held.

The Wilson Eight-Hour League was organized in this city, it was announced, "as a medium through which organized labor could express its endorsement of President Wilson's course" in keeping organized labor from bringing a great calamity upon the public. Branches are being formed in various parts of the country. The officers of this "medium" include, according to the newspaper reports, heads of government departments and other prominent officials in the Wilson administration. "Wilson Clubs" are also being organized in various parts of the country by officers of the railway brotherhoods, and the Democratic National Committee is sending out a letter by W. G. Lee, president of the Brotherhood of Railroad Trainmen, calling their attention to the legislation favorable to labor secured by the present administration. The letter says that "partisan politics should have no place in the coming November election," but that the members of the brotherhoods should "look with suspicion on the efforts of those working for Candidate Hughes," and Mr. Lee "regrets that in a few instances

members of the transportation organizations are found working for the election of those who have proven that they are opposed to labor legislation."

The railroad companies also have an example of non-partisanship in the announcement by R. S. Lovett, chairman of the Union Pacific, that he is for Wilson in spite of the mistake which he believes the President made in his handling of the strike situation. This is being given wide circulation in the bulletin of the Democratic National Committee. F. D. Underwood, president of the Erie, has also declared himself for the re-election of President Wilson.

Representative Adamson has issued a statement for the purpose of calming the fears of those who may have been afraid they would have to pay for the increases in wages in the form of higher freight and passenger rates. He asserts that the railroads will simply run their trains faster, that this will not cost anything, and that the cry of increased expense is a "mere sham and pretense urged as an excuse to try and raise freight rates." He apparently sees no reason whatever for the investigation to be made by the commission for which his law provides.

NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS

The attitude of many of the members of the state railroad commissions toward the forthcoming investigation of government railway regulation and control is indicated by a statement made in the announcement by the National Association of Railway Commissioners of its twenty-eighth annual convention, to be held in the hearing room of the Interstate Commerce Commission at Washington on November 14. The announcement states that "this, without doubt, should be the most important meeting that we have ever had and it is confidently expected that every commission will be represented. Questions of vital concern are pending, not only to us, but to the country at large, and these demand our early and serious consideration." The announcement then quotes the resolution providing for the investigation by a joint committee of the House and Senate, adding that:

"Those who are advocating the centralization of regulation in the agencies of the Federal Government will have their views fully and ably presented to the committee by the powerful and well-organized influences that are behind this movement. Those of our membership who believe in joint federal and state regulation of railroads should discharge their grave responsibilities by presenting to the committee all the facts showing the good work which has already been done by the federal and state commissions, should unite to defeat any vicious or unwise legislation which may be proposed, and should aid in the promotion of any proposed legislation which is likely to make such regulation more efficient, and should cordially co-operate with the committee and with the Congress for the promotion of the welfare of the country."

The announcement is signed by Robert R. Prentis, president, Charles E. Elmquist, chairman of the executive committee, and William H. Connolly, secretary.

The program for the meeting includes the discussion and reports of the following committees: Executive; Express and Other Contract Carriers by Rail; Safety of Railroad Operation; Railroad Service, Accommodations, and Claims; Grade Crossings and Trespassing on Railroads; Railroad Rates; Statistics and Accounts of Railroad Companies; Car Service and Demurrage; Public Utility Companies; Statistics and Accounts of Public Utility Companies; Valuation; Capitalization and Intercorporate Relations; State and Federal Legislation; Publication of Commission's Decisions. The announcement says that it is especially important "at this time when some are arraigning public regulation before the country and the Congress, that not a single committee will fail to present a carefully prepared report and thereby contribute something of permanent value to the cause of public regulation."

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS

The sixty-first annual convention of the American Association of Passenger Traffic Officers was held at the New Willard Hotel, Washington, D. C., October 17 and 18. Alexander Hilton, passenger traffic manager of the St. Louis & San Francisco, presided and there were about 100 members in attendance. In accordance with the usual custom of the association, a gavel was presented to Mr. Hilton, the retiring president, composed of wood from the Abraham Lincoln home, from the ticket office of the Chicago & Alton at Kansas City, and from the union stations at Chicago, St. Louis and Kansas City.

Action was taken on 25 applications for membership in the association. The executive committee, L. W. Landman, general passenger agent of the Michigan Central, chairman, presented a report recommending the experimental adoption of a cipher telegraphic code for use in making reservations of Pullman accommodations. This code, which was originated by J. E. Dempsey, was considered at the meeting of the association at French Lick Springs last fall and has been carefully studied by the executive committee, which recommended it as being unusually simple and workable and stated that it should probably result in a saving of 50 per cent in the cost of these messages. The code consists of three sheets which may be placed in the hands of ticket clerks.

The standing committee on association ticket paper, C. A. Cairns, general passenger agent of the Chicago & North Western, chairman, presented a report giving details of its negotiations with the printers licensed to use association ticket paper. The extension of the general arrangements with the paper manufacturers originally made to expire December 31, 1917, or the making of a new arrangement to manufacture and furnish ticket association paper, was devolved upon the paper committee with the counsel and approval of the executive committee at the convention in San Francisco and it has seemed well to have existing arrangements continue, subject to the opening of negotiations by either party at any time when the conditions may be deemed to render it desirable.

The patents for association forms of horizontal and vertical multi-road tickets and of multi-junction tickets were secured and assignments made to the secretary of the association as trustee, as announced to members in a circular of March 17, 1916. These forms of tickets were described in the *Railway Age Gazette* of April 21, 1916. The committee was instructed to continue its efforts to secure universal use of the association ticket paper and was given power to act.

The standing committee on standard forms of inter-line tickets, E. L. Bevington, chairman Transcontinental Passenger Association, chairman, presented a report submitting a proposed standard form of one-way inter-line ticket contract designed for the purpose of simplifying the contract and reducing the size of the ticket. The salient feature of the proposed form is the elimination of a large number of conditions now printed in the ticket contract and the substitution therefor of a simple statement that the ticket is issued subject to the conditions of the published tariffs. There was considerable discussion of the advisability of making such a radical reduction in the amount of information furnished to passengers and conductors but the principle of the plan was approved and it was decided to refer the report to the territorial associations for their views and that the committee should continue its work with a view to recommending similar changes in other forms of tickets.

The committee on economical distribution of folders and advertising matter, C. A. Fox, acting chairman, reported that as the result of action taken at the meeting last fall a folder committee had been appointed in each territorial association to study the conditions as to the distribution of folders in their territories and that several of these committees have ren-

dered reports which have had good results in reducing the waste in folder distribution. These territorial association committees have been continued and it was recommended that the work be left in their hands as being better adapted to local consideration than to action by the association. There was a decided sentiment among those present in favor of discontinuing the display of folders in boxes in hotels.

Frank Trumbull, chairman of the Railway Executives' Advisory Committee, addressed the meeting on Tuesday afternoon, giving a general explanation of the work of the committee in reference to federal regulation and what it had been able to accomplish by arranging for the presentation of the views of railroad officers at hearings before congressional committees. In this connection he also outlined briefly the attitude of the railways toward the forthcoming investigation of railway regulation and control under the joint resolution adopted by Congress providing for the appointment of a joint committee of the House and Senate to study the entire problem thoroughly. It is the hope of the railways, he said, that out of this investigation will come a much-needed plan of co-ordinating and simplifying our system of regulation.

"Probably a hundred million dollars is going over the dam every year as a result of the lack of co-ordination in our methods of handling this important problem," he said, "and our present system of conflicting regulation by the federal government and by the several states. Transportation cannot be regulated by state lines." At the hearings before the Newlands committee, Mr. Trumbull said, the railroads would advocate a centralization of railroad regulation in the hands of the federal government, which, in the opinion of the railroads, can best be accomplished by federal incorporation of interstate carriers. They will also advocate a reorganization of the Interstate Commerce Commission along regional lines with subordinate district commissions or branches in order that local conditions may receive due consideration, somewhat along the lines of the organization of the federal reserve banks. They also feel that the regulation of the issuance of railroad securities should be placed in the hands of the federal government but that it should not be divided between the federal government and the states. Nineteen states are now regulating the issuance of securities.

"We can't have transportation without credit," Mr. Trumbull said, "and we can't have the credit that is necessary to the development of adequate transportation facilities if we are to continue to be subjected to the uncertainties and conflicts of our present methods of regulation." Mr. Trumbull also pointed out that although the net earnings of the railways had increased by about \$300,000,000 in 1916 as compared with 1915 the return on the investment in the most prosperous year the railways ever had was considerably less than 6 per cent. He also urged the co-operation of the passenger traffic officers in promoting the dissemination of correct information regarding railway affairs and problems.

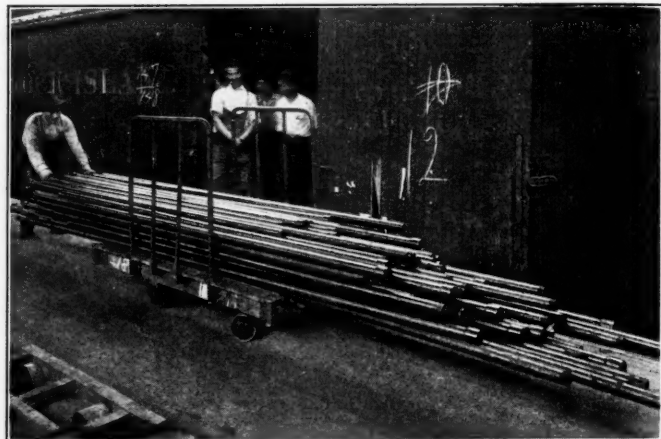
Reports were received from co-operating associations, including a letter from the Canadian Ticket Agents' Association; a paper by Harry A. Roemer, traveling passenger agent of the Chicago, Milwaukee & St. Paul, representing the American Association of Traveling Passenger Agents, on "The Get Together Spirit," and a paper by Henry R. Martin, general ticket agent of the Union Station, Indianapolis, representing the International Association of Ticket Agents, on "Prepaid Ticket Deliveries."

Officers were elected as follows: President, C. M. Burt, general passenger agent, Boston & Maine; vice-president, O. P. McCarty, passenger traffic manager, Baltimore & Ohio; secretary, W. C. Hope, general passenger agent, C. of N. J.

The entertainment program included a reception and lunch on Tuesday tendered by Washington commercial organizations, a trip for the ladies to Mt. Vernon on Tuesday afternoon, a reception and dance on Tuesday evening, an automobile trip around Washington on Wednesday afternoon and a golf tournament on Thursday.

AN EASY RUNNING PACKAGE FREIGHT TRUCK

The photographs show two applications of what is known as the Standard Improved Truck as used in the Indiana transfer freight station of the New York Central Lines at Gibson, Ind., where 200 of them have been in service for about three years. These trucks, which are intended for either hand or trailer service, have a 3 ft. by 6 ft. platform, two 11-in. main wheels and two 5½-in. caster wheels. The frame is of maple, consisting of four longitudinal sills and two end sills



A 5200-lb. Load Handled by One Man

covered with a maple floor which is protected against wear by four steel plates 3½ in. wide and extending the full length of the platform to which they are secured.

One of the features of this truck is the low platform which is only 12¾ in. above the floor, thus adapting it especially for loading heavy articles. Another feature is the use of removable racks made of 1-in. welded steel tubing. Malleable iron sockets are provided on both the ends and the



A Truck Loaded with 50 Boxes of Tobacco

sides of the truck so that the frames can be placed in either position. The advantage of this is illustrated in the photographs, one of which shows the rack in side position to facilitate the loading of long pipe and the other showing the racks at the ends of the car for a large load of small packages.

The principal gain in the use of these trucks has been brought about through the easy running qualities obtained by the use of roller bearing wheels aided to some extent by the steel runways provided in the freight house platforms. Large and heavy loads are readily handled with these trucks by one man which would have required the combined efforts of several men with the older equipment. The truck is handled by Guilford S. Wood, Chicago, Ill.

Locomotive Fuel Economy and Boiler Design*

Larger Part of Heat Losses Is Due Directly to Furnace Inefficiency; Suggestions for Improving Practice

By J. T. Anthony.

Assistant to President, American Arch Company

THE importance of the subject of fuel economy is fully realized by all mechanical and operating officers. The many angles from which it can be approached and the numerous points that bear directly on it, are more or less familiar to all.

Beginning with the specifications covering the purchase of the coal at the mines, we might enumerate: Inspection and loading at the mines, storage, weathering, handling at coal tipples, loading on tenders, firing instructions, water-level and cut-off, lubrication, drafting and front end arrangements, steam leaks, boiler washing, engine despatching, train loading, and terminal and other delays.

Other factors which tend to increase the total fuel wasted

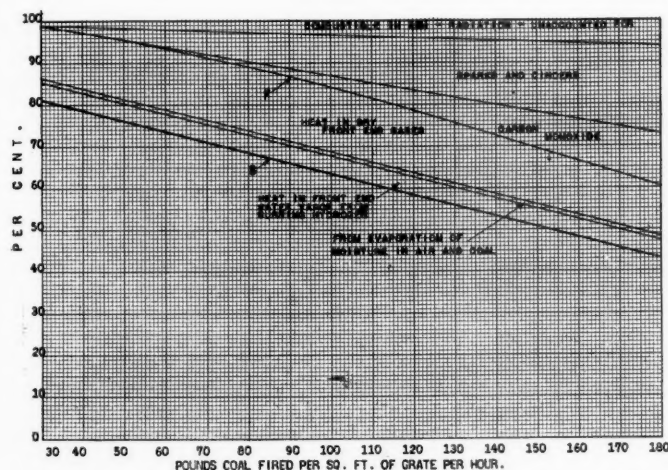


Fig. 1—Average Heat Losses in a Locomotive Boiler

might be mentioned—and the sum of these would certainly amount to an appreciable percentage of the total coal purchased by the railroads.

It is doubtful, however, if the losses enumerated above will exceed the losses directly chargeable to the boiler, despite all efforts to increase the boiler economy and efficiency by the addition of such devices as the brick arch, superheater, feed-water heater, etc. To illustrate the losses that take place in the average locomotive boiler, we will take a typical boiler, such as is used on a medium size Pacific or Mikado type locomotive. The boiler has a grate area of 54 sq. ft., 210 sq. ft. of firebox heating surface, 4,100 sq. ft. of fire tube and superheater heating surface (the tubes being 21 ft. long and $2\frac{1}{4}$ in. in diameter), air opening through the ashpan 20 per cent of grate area, and air opening through the grates 28 per cent.

Fig. 1 shows the average heat losses as the rate of combustion increases from 30 to 180 lb. of coal per square foot of grate per hour. As might be expected, the results in individual tests varied widely; but the curve as drawn will approximate average results.

The most striking losses are those due to sparks and cinders, which exceed 20 per cent at the maximum rate; carbon monoxide and incomplete combustion, which exceed 13 per cent, and heat in dry front end gases, which in some cases reaches 16 per cent. In addition, there are comparatively

small losses due to combustible in ash, radiation and unaccounted for, and heat losses in evaporating moisture in air and burning hydrogen in coal.

As shown by the line B, the over-all boiler efficiency drops from 80 per cent at low rates of combustion to 43 per cent at the highest rate. In other words, when burning 30 lb. of coal per square foot of grate per hour, 80 per cent of the heat contained in the coal fired is put into the steam; while at the maximum rate only 43 per cent of the heat contained in the coal is transferred to the steam.

It is to be noted that the losses due to sparks and cinders and incomplete combustion increase rapidly as the rate of combustion increases; while the losses due to combustible in ash, radiation and unaccounted for also increase. Under the same conditions, the losses due to burning hydrogen and evaporating moisture in the air remain almost constant, as does the loss due to heat in front end gases.

The sparks and cinders loss is due in part to the nature of the coal; but largely to the high draft necessary at high rates of combustion and to the absence of efficient baffling and mixing devices and sufficient combustion chamber space.

The losses due to carbon monoxide and incomplete combustion are due to the lack of sufficient oxygen at the high rates of combustion, and to lack of efficient mixing devices and combustion chamber space.

The loss from combustible in ash is due partly to the

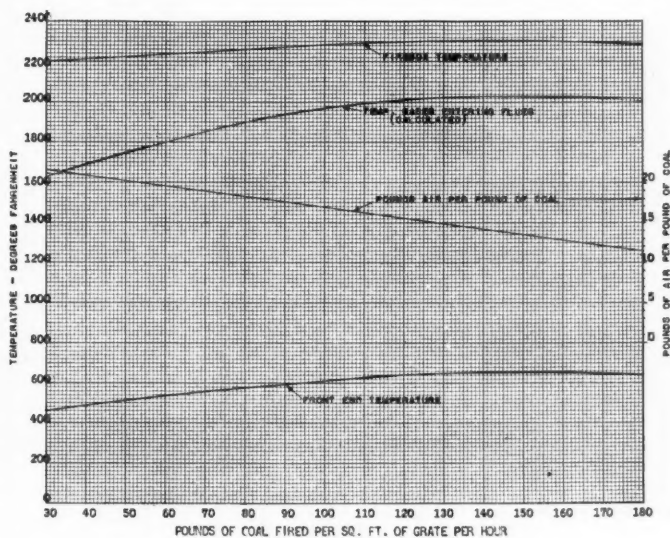


Fig. 2—Temperature and Air Supply at Different Combustion Rates

nature of the coal, but largely to the design of the grate and method of firing.

Radiation loss for a well-lagged boiler is comparatively small, though difficult to determine with any degree of accuracy.

The unaccounted-for loss is due principally to the escape of unburned hydrocarbon gases, which are not detected by the ordinary front end gas analysis.

The heat in dry front end gases is controlled by the temperature of the gases escaping at the front end and by

*From a paper read before the New England Railroad Club, Boston, October 10, 1916.

the amount of air which is used per pound of coal burned.

These two factors also control the loss due to evaporating the moisture in the air, and heat loss due to the hydrogen of course depends upon the amount of hydrogen contained in the coal and the temperature of the escaping gases.

Fig. 2 shows the temperature of front end gases, temperature of firebox, and pounds of air supplied per pound of coal, at the different rates of combustion.

It is a difficult matter to get a regular curve showing the air supplied, on account of the wide variation in results given by the different gas analyses. This trouble is due not to any difficulty in making the gas analysis, but to the great difficulty of getting a fairly uniform sample of gas from analysis.

All of the heat losses shown in Fig. 1 are chargeable to the boiler. Some of them are directly chargeable to the furnace (or firebox), while others are chargeable to the heating surfaces. If we ignore the radiation losses from the barrel of the boiler and assume that all the losses under this head are chargeable to the furnace, the sum of these losses—together with those due to sparks and cinders and incomplete combustion—will be the measure of the furnace efficiency.

This is shown in Fig. 3, by curve No. 2, where the furnace efficiency is equal to the heat liberated divided by the heat in the coal. As shown, the heat loss due directly to the furnace varies from 2 per cent to 40 per cent of the entire heat in the coal; in other words, this much of the heat contained in the coal is not liberated in the firebox and is not made available for absorption by the heating surfaces.

Curve 4 shows the over-all boiler efficiency, which is measured by the ratio of heat absorbed to heat in the coal. The space between curves 2 and 4 represents heat liberated in the furnace, but not absorbed by the heating surfaces. This amounts to from 18 to 20 per cent of the heat contained in the coal, and of this large amount a relatively small proportion is available for absorption by the heating surfaces.

It is evident that the temperature of the gases flowing through the tubes cannot possibly be reduced below the temperature of the water or steam in the boiler. With a boiler pressure of 200 lb., the steam temperature is 388 deg., and all the heat required to raise the products of combustion to this temperature is unavailable for absorption by the heating surfaces and cannot be charged against them. As explained above, the amount of this unavailable heat depends principally upon the temperature of the front end gases and the air supply per pound of coal. On the chart it is represented by the space between curves 2 and 3.

The space between curves 3 and 4 represents the heat contained in dry front end gases that is available for absorption, but is not absorbed, and this heat can of course be directly charged against the boiler heating surfaces.

Curve 3, then, shows the amount of heat available for absorption and curve 4 shows the amount absorbed, and the ratio of heat absorbed to heat available becomes the measure of the heating surface efficiency. In other words, the percentages expressed by curve 4, divided by the percentages of curve 3, will give a figure which is a true indication of the heating surface efficiency.

This heating surface efficiency is shown by curve 1, which, it will be noted, ranges from about 98 per cent to 88 per cent at the highest rates, there being very little drop in the heating surface efficiency after the rate of combustion gets up to about 100 lb. of coal per square foot of grate per hour.

It was stated that curve 2 shows the true furnace efficiency, in that it represents the ratio of the heat liberated to the heat in the coal. Some authorities charge against the furnace all of the unavailable heat contained in the products of combustion, maintaining that it is the true function of the furnace to make all of the heat contained in the coal available for absorption by the boiler heating surfaces.

In this case, curve 3 would become the furnace efficiency

line. This seems hardly fair, as a large part of the heat contained in the gases (even with the theoretical minimum air supply) is unavailable for absorption and should not be charged against the furnace. Disregarding these technicalities, curve 1 will represent the efficiency of the heating surfaces; curve 2 will represent the efficiency of the firebox (or furnace), and curve 4 will represent the over-all efficiency of the boiler.

Having located and grouped the heat losses, thereby determining the efficiency of the heating surfaces and the furnace, the next problem is to determine the best method of reducing or eliminating these losses and increasing the efficiencies.

As indicated in Fig. 3, the losses directly chargeable to the furnace are far greater than those chargeable to the heating surfaces, and the firebox therefore seems to offer the largest field for future improvement.

The loss due to sparks and cinders is caused principally by the high draft necessary at the high rates of combustion. By reducing the rate of combustion, we can in a measure reduce this loss. Boiler capacity, however, is of prime importance, and we cannot afford to reduce this capacity by reducing the amount of coal fired.

It becomes necessary then to reduce the rate of combustion by increasing the grate area. This will enable us to carry a

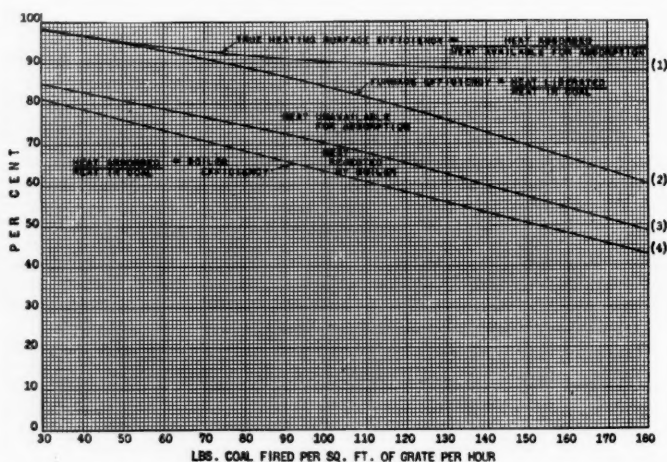


Fig. 3—Furnace Efficiency

light fire; get a more uniform supply of air through the fuel bed; reduce the lifting action of the draft upon fine particles of coal, and, if accompanied by increase in firebox volume or combustion space and efficient baffling devices, will result in a material reduction in loss due to sparks and cinders, as well as those due to incomplete combustion and escape of carbon monoxide and unburned hydrocarbon gases.

In order to burn coal completely, it is necessary to supply a sufficient amount of oxygen; to mix the oxygen with the combustibles of the coal and give them time to burn. Complete combustion cannot be obtained unless these requirements are met.

The effect of grate area upon evaporation is perhaps not well understood. Firebox heating surfaces take up practically all of their heat by radiation; that is, the heat travels from the luminous fuel bed, flames and brick work by "rays" or "waves" to the firebox heating surfaces. The amount of heat so received depends primarily upon the temperature of the radiating bodies and upon the area or extent of these radiating bodies, and not upon the extent of the firebox heating surfaces.

The amount of radiant heat transferred is influenced to a small extent by the temperature of the firebox heating surfaces; but the effect of a slight increase in temperature here is insignificant as compared with an increase in temperature

of the radiating surfaces, such as the fuel bed or the flames.

When working at ordinary capacity, with clean sheets, it is possible that the temperature of the fire side of the firebox sheets is about 440 deg. With this temperature of the firebox sheets, the amount of heat radiated by each square foot of radiating surface is shown by the curve in Fig. 4.

It will be noted that a slight increase in temperature of the radiating surfaces gives a marked increase in the amount of heat radiated, and therefore in the amount of water evaporated. Increasing the firebox temperature from 2,040 deg. to 2,540 deg. doubles the amount of heat radiated from each

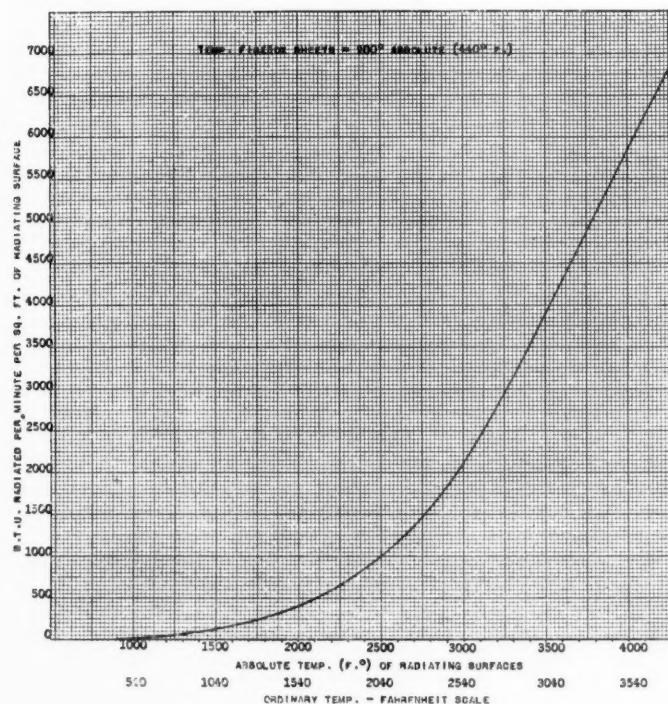


Fig. 4—Curve Showing Heat Radiation

square foot of radiating surface, and practically doubles the evaporation from the firebox heating surfaces.

This shows the vital importance of high temperatures, both in fuel bed and flames, and is suggestive of the ill effects that result from bank firing, or the placing of a lot of green coal in the firebox at one time. In order to get the maximum evaporation, it is necessary that the fuel bed be kept at a white-hot temperature all over. The bank of green coal reduces the effective heating surface, reduces the temperature of the firebox, and reduces the evaporation.

Accurate data on the question of firebox evaporation is difficult to get, as no conclusive tests have ever been made. Using the available data as a basis, however, we have plotted the curves in Fig. 5, showing the possible firebox evaporation and tube evaporation. The top curve shows the actual equivalent evaporation from the boiler at the varying rates of combustion. The firebox evaporation was calculated, and the tube evaporation is of course the difference between the firebox and the total.

The firebox evaporation was calculated by using the firebox temperatures shown in Fig. 2, and adding the heat radiated by the flames to that radiated from the fuel bed, assuming in all cases that the temperatures of the flames and of the fuel bed were the same, and that the average temperature was that shown by the curve, Fig. 2.

The coal used in this particular test contained about 35 per cent volatile matter, with a heat value of 14,500 B.t.u. per pound. With a coal of this volatile content, the firebox will be completely filled with flame at moderate or high rates of combustion. If the firebox is completely filled with flame,

the effective flame-radiating surfaces will be equal to the exposed firebox heating surfaces.

The firebox in question had a heating surface of 210 sq. ft. Assuming that the fuel bed covered the side sheets to a depth of one foot, we would have 180 sq. ft. exposed to the action of the flame, and if the firebox is completely filled with flame, we could safely assume that we would have 180 sq. ft. of effective flame-radiating surface.

At low rates of combustion, the amount of volatile combustible driven off would not be sufficient to completely fill the firebox with flame, and it is probable that at very low rates (around 30 or 40 lb. per square foot of grate), the firebox would only be about half filled with flame.

We worked on this assumption in making the calculations, with results shown by the curves in Fig. 5. As indicated by the curves, the firebox evaporated nearly one-half of the total at low rates, and about one-third at the highest rate. The maximum calculated evaporation from the firebox was 21,000 lb. per hour, or an equivalent evaporation of practically 100 lb. of water per square foot of heating surface.

To secure such evaporation it would be necessary to have a temperature drop of 140 deg. between the fire side and the water side of the sheets—assuming that we use sheets $\frac{3}{8}$ in. thick, free from scale—which would give a fire side temperature of 528 deg. and which is probably well within safe working limits.

Under the same conditions, the maximum evaporation from the tube heating surfaces (including superheater) would be 10 lb. per square foot per hour; or, the firebox would be evaporating 10 times as much as the tubes per square foot of surface.

An equivalent evaporation of 100 lb. of water per square foot of firebox heating surface per hour seems abnormally

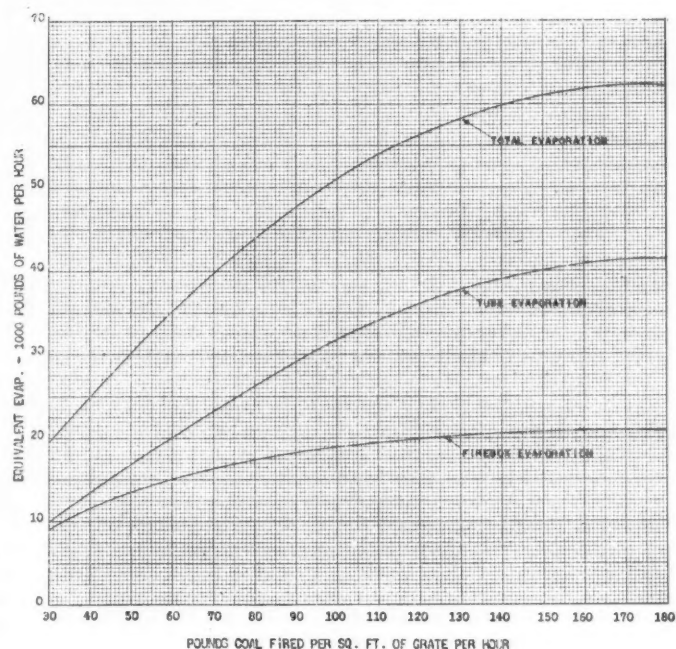


Fig. 5—Evaporation Curves

high, but there is no logical reason why such an evaporation should not be obtained. It is merely a question of getting a sufficient amount of radiating surface at a sufficiently high temperature.

Increasing the grate area increases the area of the fuel bed radiating surfaces, and increasing the firebox volume or combustion chamber space increases the flame-radiating surfaces. Increasing the grate area also means low rates of combustion, more uniform air supply, lighter fire, reduction in losses due to unburned fuel, an increase in the percentage of heat lib-

erated and an increase in firebox efficiency, both as a furnace, or heat-liberator, and as a heat-absorber.

It is possible that the value of combustion chamber space is not fully realized, for the large number of engines now being built with abnormally long boilers and tubes offers opportunities for combustion chamber installations of which advantage is not being taken.

Bituminous coal is not a homogeneous substance. It burns partly as a solid and partly as a gas. The solid part burns on the grate in the form of fixed carbon, while the volatile burns in the combustion chamber space as a gas.

The coal used in the test under consideration contained 58 per cent fixed carbon and 26 per cent volatile combustible. Therefore, one pound of the coal contained .58 lb. of carbon, which, burned on the grate, liberates 8,500 B.t.u., and .26 lb. volatile combustible, which, burned in the combustion chamber space, liberates 6,000 B.t.u.

Thus we see that more than 40 per cent of the heat is liberated by burning gas in the combustion chamber space, considering that all the fixed carbon burns on the grate. In actual practice, however, the fixed carbon is not completely burned on the grate.

The oxygen, on coming in contact with the hot coal near the grate, combines with the carbon to form carbon dioxide, and this carbon dioxide, passing up through the hot fuel bed, takes up more carbon and is partly reduced to carbon monoxide. After leaving the fuel bed, this carbon monoxide is burned in the combustion chamber space and again forms

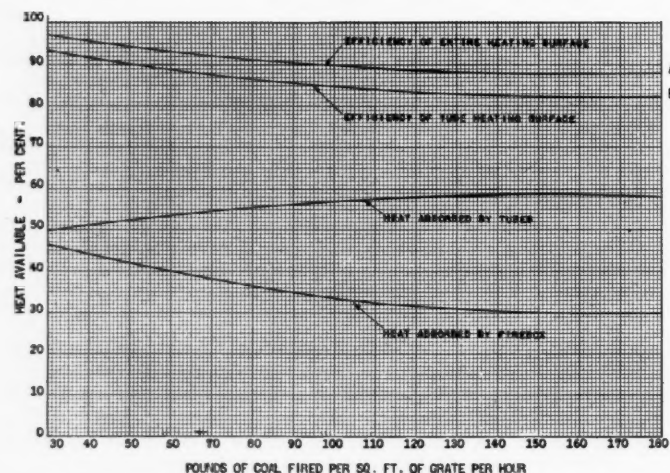


Fig. 6—Heat Absorbed by Firebox and Tube Surfaces

carbon dioxide—provided, of course, that sufficient oxygen is present and proper mixing is accomplished. The amount of carbon monoxide formed in the fuel bed depends upon the temperature of the fuel bed and its thickness.

Gas samples taken just above the fuel bed in stationary furnaces indicate that a large percentage of the fixed carbon is incompletely burned to carbon monoxide in the fuel bed. While there is no data available as to the exact percentage of carbon monoxide formed in the fuel bed of a locomotive, considering the temperatures and thickness of the fire generally carried, it is not unreasonable to suppose that the fuel bed acts principally as a gas producer and that at least four-fifths of the carbon is incompletely burned on the grate. The combustion of the carbon monoxide so formed is completed above the grate, in the combustion chamber space.

If this condition does exist, every pound of coal burned liberates 3,750 B.t.u. in the fuel bed and 10,750 B.t.u. in the combustion chamber space above the fuel bed. In other words, 26 per cent of the combustible is completely burned on the grate, and 74 per cent is burned above the grate. While these figures may not be strictly accurate, they serve to show the importance of ample combustion chamber space, and of the presence of free oxygen or air above the fuel bed.

The accompanying table shows the approximate composition, weight and volume of the gases arising from the fuel bed under the conditions mentioned above, and of the gases in the front end when the combustion is complete, the figures being based on the burning of one pound of the coal with 16.2 lb. of air (as shown in the curve in Fig. 2), at a rate of combustion of 100 lb. of coal per square foot of grate. Under these conditions, in actual practice, combustion would not be perfect, and the front end gases would show some CO and a smaller CO₂ content.

TABLE SHOWING COMPOSITION, WEIGHT AND VOLUME OF GASES ARISING FROM THE FUEL BED AND IN FRONT END AFTER COMBUSTION IS COMPLETED, WHEN 1 LB. OF COAL, CONTAINING 58 PER CENT FIXED CARBON AND 26 PER CENT VOLATILE COMBUSTIBLE, IS BURNED WITH 16.2 LB. OF AIR.

Gases	Name.	Symbol.	Arising from fuel bed (T. = 2,300 deg.)			In front end (T. = 615 deg.)		
			Weight, lb.	Vol., cu. ft.	Vol., Per cent	Weight, lb.	Vol., cu. ft.	Vol., Per cent
Carbon monoxide	CO	1.08	78	6.57	.....	.....	.....
Hydrocarbons*	C ₂ H ₆	.26	17	1.43	.....	.....	.....
Carbon dioxide	CO ₂	.43	20	1.68	2.89	51.5	11.17
Sulphur dioxide	SO ₂	.03	1	.08	.03	0.4	.09
Oxygen	O ₂	2.75	174	14.65	1.16	28.4	6.16
Nitrogen	N ₂	12.39	890	74.92	12.39	356.0	77.22
Water vapor	H ₂ O	.07	8	.67	.54	24.7	5.33
Totals		17.01	1,188	100.00	17.01	461.0	99.97

*Ethane (C₂H₆) assumed to represent the average composition of the hydrocarbon gases.

With a firebox temperature of 2,300 deg., every pound of coal burned produces 1,188 cu. ft. of gas. Of this large amount, 78 cu. ft. is carbon monoxide, which is combustible, and 17 cu. ft. is a rich hydrocarbon gas, the average composition of which we have taken as ethane (C₂H₆). Mixed with these combustible gases are 20 cu. ft. of carbon dioxide, 174 cu. ft. of free oxygen and 890 cu. ft. of inert nitrogen, together with traces of sulphur dioxide and water vapor; or, we have 95 cu. ft. of combustible gases mixed with 174 cu. ft. of free oxygen and more than 900 cu. ft. of inert gases.

To put it in another way: For every molecule of combustible gas there are present less than two molecules of oxygen, which are mixed with 10 molecules of inert gases. These inert gases interfere with the meeting of the combustible gases with the oxygen and tend to retard combustion.

The light combustible gases are not difficult to burn, if supplied and intimately mixed with the necessary amount of oxygen and given time to burn; but, as the figures indicate, the relatively small amount of oxygen present is mixed with such a large amount of inert gas that the probability of the combustible gas coming in contact with the oxygen within the very limited time available is greatly reduced.

The heavy hydrocarbons are driven off in a semi-fluid or pasty condition, sometimes in the form of small globules of tar, which are very difficult to burn and which for the most part escape unburned. The heat loss due to this source can be reduced only by the use of efficient mixing devices and the provision of long combustion chambers, and ample air supply above the fuel bed.

We spoke of the time required for combustion of the volatile hydrocarbons. As shown by the table, under the conditions given every pound of coal produced 1,188 cu. ft. of gas at a firebox temperature of 2,300 deg. When burning coal at the rate of 100 lb. per sq. ft. of grate per hour, there is produced 1,780 cu. ft. of gas per second. The volume of the firebox in question is 250 cu. ft.; so this firebox must discharge and be refilled with gas more than seven times per second—or, the time available for the combustion of each particle of gas is less than one-seventh of a second. As the rate of combustion decreases, this time increases, and as the rate of combustion increases, this time available decreases.

It is very apparent, however, that by increasing the firebox volume and the combustion chamber space, we increase the time available for the combustion of the volatile matter. We see, therefore, that combustion chamber space is valuable both

as a means of increasing the efficiency of combustion, and also as a means of increasing the radiating surfaces and firebox evaporation, and as we increase either of these, we increase the over-all efficiency of the boiler.

The curves in Fig. 6 show the amount of heat absorbed by the firebox and tube surfaces, and the efficiency of the entire heating surfaces as compared with the tube heating surfaces. It will be noted that at low rates of combustion the tubes absorb from 90 to 94 per cent of the heat available, while at high rates they absorb about 83 per cent of the heat available. In other words, as we increase the amount of heat to be absorbed by the tubes we decrease their efficiency. It will be noted that the efficiency line of tube heating surfaces almost parallels that showing the heat absorbed by the firebox. As the percentage of total heat absorbed by the firebox decreases, the percentage of heat to be absorbed by the tubes increases, and the tube efficiency decreases.

It will appear from this that if under any given set of conditions we can increase the firebox evaporation, the efficiency of the tubes and the over-all efficiency of the boiler will be increased. The firebox heating surfaces have an efficiency of, we might say, 100 per cent; that is, these surfaces will absorb practically all of the heat that is available—and by "available heat," in this case, we mean the radiant heat. The firebox heating surfaces absorb but very little heat by convection from the hot gases, and the heat contained in the hot gases cannot be considered as available for the firebox heating surfaces. By increasing the amount of heat given off by radiation, we decrease the amount of work to be done by the tubes.

Tubes take up heat by convection; that is, by actual contact of the hot gases against the tube heating surfaces. The amount of heat so received depends upon the temperature, density and velocity of the gases passing through. As we increase the rate of combustion, we increase the weight and volume of the gases and therefore the velocity. At the same time there is an increase in the temperature and a decrease in the density.

In order to get heat out of the gases into the tube heating surfaces, it is necessary to bring the small particles of gas into actual contact with the heating surfaces. To do this successfully it is necessary to break up the gas into small streams by the use of small tubes. As the gases pass through the tubes the molecules are vibrating rapidly in all directions, and are striking against the heating surfaces, giving up their heat. The amount of heat given off will depend not only upon the temperature of the particles of gas, but also upon the number of blows they strike against the heating surfaces. This depends partly on the density, which controls the number of molecules in a given volume of gas, but largely on the diameter of the tube.

A decrease in the diameter of the tube decreases the average distance of each particle of gas from the heating surfaces. Each particle will therefore have a smaller distance to travel in order to strike the heating surfaces, and in passing through a tube of given length it will come in contact with the surfaces oftener and will give up more heat—thus resulting in a lower front end temperature and higher boiler efficiency.

The efficiency of a tube increases as the diameter decreases and as the length increases; though tests seem to indicate that tube lengths in excess of 100 or 110 times the internal diameter are not productive of high capacity or efficiency. In other words, the tube heating surface gained by increasing the length above 110 times the internal diameter is of little benefit in reducing front end temperatures and in increasing the boiler capacity. It would seem, then, that any improvement in the efficiency of tube heating surfaces must be brought about by decreasing the diameter of the tubes, or by decreasing the amount of work to be done by the tubes.

As was indicated by Fig. 6, increasing the percentage of

heat absorbed by the firebox reduces the percentage of heat to be absorbed by the tubes and increases the tube efficiency. This increase in firebox heat absorption can be obtained by increasing the grate area, combustion chamber space and, necessarily, the firebox heating surfaces.

The use of larger fireboxes and longer combustion chambers would enable us to reduce the present excessive length of tubes—and possibly to increase their efficiency, by a reduction in the diameter. The present troubles on account of tubes plugging and filling up are not due to the size of the tubes used, but are due entirely to the incomplete burning of the fuel in the firebox.

If the present furnace conditions can be remedied to the extent that approximately perfect combustion can be obtained, there is no logical reason why a tube smaller in diameter and shorter in length cannot be used effectively; but such tubes can be used only in conjunction with a firebox containing large grates, efficient baffling and gas mixing devices, large volume and long flame-way or combustion chamber space.

A comparatively small percentage of the engines in service today are equipped with combustion chambers, although this deficiency has been partly overcome on more than 30,000 locomotives by the installation of the brick arch. What has been said about the value of radiating surfaces, high firebox temperatures, complete mixing and baffling of the gases, and combustion chamber space, is sufficient to explain the benefits derived from the arch, and to account for its almost universal use.

The value of this device is thoroughly recognized. While it has done much to reduce fuel losses and increase locomotive efficiency, it cannot overcome all of the deficiencies of firebox or boiler design. It will increase the efficiency of a firebox limited in grate area or volume—but the maximum firebox efficiency cannot be obtained by the use of the arch alone. Large grates, with medium rates of combustion and long combustion chambers are necessary, and, when used in conjunction with the arch, will add materially to both the capacity and efficiency of the locomotive boiler.

To summarize briefly:

The capacity and efficiency of the locomotive boiler seem to be limited by the inability of the firebox to properly burn the coal and liberate the heat contained.

The larger part of the heat losses (particularly at high rates of combustion) is due directly to the inefficiency of the furnace.

The second largest heat loss is that due to the heat escaping in the front end gases, which is unavailable for absorption by the boiler.

The amount of heat rejected by the heating surfaces is comparatively small, and the heating surface efficiencies are high, as compared with the furnace efficiency.

The efficiency of the furnace can be increased by increasing the grate area and reducing the rate of combustion, by providing effective baffles and gas mixers, and by increasing the firebox volume by making the fireboxes as deep as possible and equipping them with long combustion chambers.

The front end heat loss will be reduced as the efficiency of the furnace is increased; but there will always remain a large portion of unavailable heat, which can only be utilized by means of some auxiliary apparatus—preferably a device for pre-heating the air used in the furnace.

The efficiency of the heating surfaces can be increased by increasing the radiating surfaces. This will result in a higher firebox evaporation and reduction in the amount of heat to be absorbed by the tubes—which in turn would mean higher tube efficiency.

Increasing the size of firebox and length of combustion chamber necessarily means shortening the tubes. If the tubes are reduced in length to less than 110 times the diameter, the decrease in efficiency will be largely offset by the increase in heat absorption by the larger firebox, and can be more than

offset by decreasing the diameter of the tube to correspond with the decrease in length.

The vital part of the boiler is the firebox. It liberates and makes available the heat energy stored in the coal. A considerable portion of this energy is now being wasted, through the inability of the firebox to properly burn the coal. The highest degree of fuel economy cannot be obtained while this condition exists. Future developments in firebox design along the lines suggested should result in a still further reduction in the coal bill and an increase in the steaming qualities and efficiency of the locomotive.

BALTIMORE & OHIO SAFETY AND SANITATION RULES

The Baltimore & Ohio has recently issued to its employees a book of Safety and Sanitation Rules. The book has 27 pages and both the form of the book and the style of the rules are patterned closely after the standard code. The safety rules number 120 and are divided into: general rules; transportation department; maintenance of equipment department; and maintenance of way department. In addition to the rules there are also instructions to foremen. The sanitary rules are 13 in number.

The book itself is prefaced by the following:

STRIVE always to protect yourself and your fellow workers.
ADVISE and caution those who do not or will not take precautions.
FORGET petty trifles and keep your mind on your work.
ELIMINATE risks and hazards from your surroundings.
THINK ahead what to do and what not to do in emergencies.
YIELD to the better judgment of your superiors.
FROWN on horse play pranks as they usually hurt someone.
INTEREST yourself in the principles of first aid to the injured.
REMEMBER you must conquer Booze to be safe.
STOP, look and think before you act—don't take chances.
TAKE Safety First seriously; it is no joke to get hurt.

The following extracts afford a good example of the general character of the book:

10. Employees must not hang on moving cars or engines except when required by their duties.

11. No persons will be permitted to ride on the pilot, pilot beam or on the step attached to the pilot or pilot beam of a locomotive, except when their duties actually require them to do so.

18. Attention should be given to your work while on duty. Diversion of attention in any way, from work, often leads to serious accident. Remember to be careful under all circumstances and keep in mind at all times the necessity for care. It is by so doing that one disciplines himself, and when caution becomes a habit there will be few accidents.

37. Passenger trainmen must not move stepping boxes when passengers are about to step on them. When using stepping boxes, always say to passenger "Watch Your Step."

39. Passenger trainmen should when practicable get aboard train before it starts.

40. When riding on a train on which passengers are carried, employees (other than those engaged on the train) will alight from the side intended for passengers but must not alight while the train is in motion.

46. Sprinkling hose on an engine shall not be left in a position where it may be mistaken for a handhold.

Foremen [in shops] must show a sincere desire to prevent injury. Their attitude toward this work will be reflected in actions of the men under their direct supervision.

To employees in and around shops: The reports of injuries occurring in and around shops show that almost all of them could have been prevented by the exercise of greater care, by having used your head before using your hands; by having secured a solid footing and firm grip before you lifted.

87. [Things prohibited.] Entering a room with open flame light where gasoline, kerosene or other explosives are stored or kept.

91. Scuffling, wrestling, throwing material or playing jokes of any kind.

108. Hand cars or hand trucks must not be used at night, nor in the daytime when approaching trains cannot readily be seen by reason of fog, storm or snow, except by permission of the superintendent or if unable to communicate with the superintendent, except by proper flag protection.

[Sanitary rules.] 4. Clean sheets and pillow cases should be provided each occupant of a bed at rest houses, Y. M. C. A. buildings, etc.

5. No employee will be allowed to occupy a bed without first removing soiled outer garments.

6. Employees who would otherwise not do so should be encouraged to use shower baths.

RAILROAD SECURITIES HELD ABROAD

L. F. Loree, president of the Delaware & Hudson, has made public the results of his further inquiries as to the amount of American railroad securities held abroad.

At the time this inquiry was first undertaken it was ascertained that the securities held abroad on January 31, 1915, were of a par value of \$2,704,402,364. Information was received from 144 railroad companies, being all the railroads in the United States over 100 miles in length, and 105 companies reported securities held abroad.

During the year ending July 31, 1916, there were returned to the American market securities of the par value of \$807,881,666. During the six months ending July 31, 1915, there were returned securities of the par value of \$480,892,135. There were held abroad on July 31, 1916, securities of the par value of \$1,415,628,563 and having a market value of \$1,110,099,090.

The following table shows the par value and market value of each class of securities held abroad on July 31, 1916, July 31, 1915, and January 31, 1915:

Class of security	Par value	Market value
Preferred Stock—		
July 31, 1916.....	\$120,597,750.00	\$93,816,715.00
July 31, 1915.....	163,129,850.00	117,863,393.01
January 31, 1915.....	204,394,400.00	.....
Second Preferred Stock—		
July 31, 1916.....	4,858,650.00	2,060,256.00
July 31, 1915.....	5,608,850.00	2,115,415.00
January 31, 1915.....	5,558,150.00	.....
Common Stock—		
July 31, 1916.....	336,761,704.00	234,154,103.00
July 31, 1915.....	511,437,356.25	342,225,958.00
January 31, 1915.....	573,880,393.00	.....
Notes—		
July 31, 1916.....	9,070,955.00	6,844,240.00
July 31, 1915.....	24,632,291.93	22,574,283.93
January 31, 1915.....	58,254,390.16	.....
Debenture Bonds—		
July 31, 1916.....	74,796,900.00	69,858,284.00
July 31, 1915.....	160,288,700.00	141,444,593.00
January 31, 1915.....	187,508,310.00	.....
Collateral Trust Bonds—		
July 31, 1916.....	85,166,470.00	66,526,692.00
July 31, 1915.....	180,590,850.00	136,422,185.75
January 31, 1915.....	282,418,415.26	.....
Mortgage Bonds—		
July 31, 1916.....	774,793,834.00	628,183,797.00
July 31, 1915.....	1,150,339,130.00	962,081,613.26
January 31, 1915.....	1,371,156,851.00	.....
Equipment Trust Bonds—		
July 31, 1916.....	7,788,300.00	7,015,683.00
July 31, 1915.....	25,253,201.00	24,480,410.55
January 31, 1915.....	20,233,455.00	.....
Car Trusts—		
July 31, 1916.....	836,000.00	681,320.00
July 31, 1915.....	29,000.00	29,060.00
January 31, 1915.....	.....	.....
Receivers' Certificates—		
July 31, 1916.....	958,000.00	958,000.00
July 31, 1915.....	2,201,000.00	2,201,000.00
January 31, 1915.....	998,000.00	.....
Total—		
July 31, 1916.....	\$1,415,628,563.00	\$1,110,099,090.00
July 31, 1915.....	2,223,510,229.18	1,751,437,912.50
January 31, 1915.....	2,704,402,364.42	.....

Meeting of Railway Real Estate Association

Papers and Discussion of Land and Tax Questions As Well As of Certain Aspects of Federal Valuation

THE second annual meeting of the Railway Real Estate Association was held at the Hotel Sherman, Chicago, on October 11, 12, and 13. President B. A. McAllister, land commissioner of the Southern Pacific, presided.

VALUATION OF RIGHT OF WAY

James P. Nelson, member of the valuation committee of the Chesapeake & Ohio and member of the eastern land committee of the Presidents' Conference Committee, read a paper on "Valuation of Right of Way, and Other Lands of a Common Carrier, Under the Act of March 1, 1913," of which the following is an abstract:

In no phase of the work of federal valuation has there arisen a sharper difference of opinion between the division of valuation and the representatives of the railways than as to the proper procedure in ascertaining the value of lands. The valuation act calls for the value of the physical property. Then it calls for "other values and elements of value, if any," in order to make up the entire value of the railway as a living, going, articulated entity. The foundation of this value is our right of way, and our great terminal lands—our real estate devoted to the service of the public.

The procedure of the division of valuation in ascertaining the value of our lands devoted to public service is, first, to get from the land records recent sales of lands whose sales are supposed to reflect value on our lands. Not in all cases are those lands actually adjacent to our lands. In a vague kind of a way these sales are used by the government land appraiser to enable him to form an opinion as to the naked value of the lands adjacent to, and similar to, our lands. Next the appraiser gets the opinion of various persons as to the naked value of these similar and adjacent lands. He divides our right of way along our line into "zones" of varying length, each "zone" including a stretch of right of way that is, in his opinion, of one kind, and of one value. Sometimes he gets data as to the assessment of these similar and adjacent lands for taxation purposes. This data is reported to the division of valuation at the headquarters of the valuation attorney, and, by some person, or persons, who have never seen our lands, our values are fixed. The absurdity of this procedure should condemn it.

But there is one phase of the procedure that is interesting. The land appraiser who collects the data in the field, and reports his opinions as to the value of these adjacent and similar lands, sees our lands, and often our railway, for the first time. He is, so far as I have seen these appraisers, a man seeking to be fair and just. He is intelligent. But he seeks to do that which is the work of an expert, and we know that we who are trained in the service of our real estate departments are often at a loss to say what value we should place on land with which we are familiar. We would not call into our councils men who do not know the land in question. And yet, the value of our railway lands is fixed by men who know nothing of our lands.

The division of valuation acknowledges that it is ignoring the mandates of the valuation act when it does not, as commanded by the act, ascertain "the present cost of condemnation and damages in excess of present value of lands." The division holds that its mode of procedure is justified by the decision in the "Minnesota Rate Cases," which decision nullified the mandate of the act, according to the division of valuation.

Out of the "Minnesota Rate Cases" the division of valuation has read a rule, or "formula," for the ascertainment of

land values, whereas in that decision Justice Hughes said: "The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts."

We recognize that the data as gotten by the government land appraisers is "relevant" in this work. But we claim that there are other and more pregnant facts. It is the "reproduction," or the "re-acquisition," of our lands that is demanded by the act, and the cost of that "reproduction," or "re-acquisition." Facts as to severance damages, and other damages; facts as to necessary cost of a strip of land, as compared with the value per unit of area of the entire tract out of which has come our rights of way, are ignored. We who have bought rights of way have learned the fundamental and proper principle that no one will sell a strip of land, or an irregularly shaped parcel of land, at the price per unit of area for which the owner would sell the entire tract out of which comes the strip or parcel. (Mr. Nelson emphasized the importance of the railways collecting data as to their actual experience in acquiring land for railroad purposes. All "relevant facts" should be gathered and placed at the disposal of their counsel.)

Pierce Butler, in his analysis of the decision in the "Minnesota Rate Cases," demonstrates that the justice was not laying down any "formula" for the valuation of lands, because, had he so done, he would have been self-contradictory. The decision was to say that in these cases the railways had failed to submit in their evidence "relevant facts" to sustain their claims. The decision is simply specific as to the cases at bar. No general doctrine was propounded. No rule or "formula" was declared.

Frank W. Stevens, valuation counsel of the New York Central Lines, and chairman of the land committee of the eastern group, has given us an able analysis of the decision. He says: "The conclusion that the language of the court means that railroad lands can never have a greater value than contiguous lands is not warranted by either specific language of the court or by its course of reasoning."

Value is a judicial question, not a legislative one, and the province of a court of proper jurisdiction is to "ascertain," not to "fix," value, and the court demands always "relevant facts" as demanded by them.

What, at last, determines the value of our right of way as such?

We acquire strips of land, and they are welded together as a continuous right of way. To say that, after this welding, the value of the continuous right of way is the sum of the prices paid for each parcel is to state an absurdity. It is a well known fact that the welding together of a number of parcels of land, making one tract of the separate parcels, does add value to the welded parcels that did not belong to them as individual parcels. Therefore our right of way as such, a continuous, long strip of land, has become land devoted to the highest use to which land can be devoted, and the use to which a thing is put, determines its value; the highest use for which a thing is adapted determines its value. This doctrine is well established by our courts of final resort. If a parcel of land has a peculiar fitness for railroad purposes, that fitness gives it a peculiar value, and the owner of a parcel is entitled to a price accordingly, even though the land be otherwise valueless.

It is held by some persons that after the right of way comes into use, *there comes also an added value, because of the use.*

The parcels that go to make up the continuous right of way are to the parcels as before they became right of way, as the refined metal is to the crude ore as it lay hidden in the earth. The land, as right of way, is doing the highest possible work, and its "present value" should be ascertained accordingly. The higher the use, the greater the worth, the greater the value. Two strips of right of way, one bearing a large traffic, the other a lighter traffic, have different values, even though the two be similar lands. But this view is not accepted as part of our platform.

Our right of way is not for sale as land at any price, unless we abandon the use of the right of way, and then, at once, it may become utterly valueless. We have destroyed its value for every other purpose except a railroad purpose. That purpose gone, the value has gone. As it were, we take a lifeless body, and by making it a right of way, we breathe into it the breath of life. If we cease to use the land as right of way, then, unless it has fitness for some other purpose, it has lost the breath of life.

To seek to value right of way by the value of adjacent lands leads us at times into an absurdity. A railway, as in the case of the Chesapeake & Ohio and other lines, lies through a canyon, along a river, at the foot of steep mountains, and, sometimes, cliffs. On one side is a rushing river, on the other steep mountain slopes, or cliffs. There is no similar land available for railroad purposes. Indeed, the right of way is hewn through the cliffs. The railway has created the right of way. How will the division of valuation apply its rule, or "formula"? It is the unanswerable logic of the "Reductio ad absurdum," and no chain is stronger than its weakest link.

RAILROAD TAX ASSESSMENTS ON BASIS OF EARNINGS

The following is an abstract of a paper by S. G. Cramp, assistant real estate agent of the Pennsylvania Lines West, on "Railroad Tax Assessments on the Basis of Earnings":

In almost every state in the union it is the practice to tax railroads either upon their earnings, or upon some fixed valuation which is determined to a greater or lesser extent from the earnings, gross or net, and sometimes taking into consideration both gross and net, as well as capitalization. The use of earnings, however, whether gross or net, as the sole basis of determining the taxation of a railroad tends to establish an unbending or universal rule, and it is a fact beyond dispute that an unbending rule or law will always do injustice and injury to someone.

For state and local taxation if the basis of net earnings alone is used, then some other method must be adopted for taxing the railroad that has no net earnings or operates at a deficit.

Since the great growth of railroad and industrial corporations has become apparent, there has been almost a constant search for some mathematical formula or definite rule by which they may be assessed or taxed. I firmly believe that no such formula or rule will ever be discovered that will do entire justice in every case, for all railroads are not similar. As a general rule, the taxable value of property is its bona fide sales price, and a practical man in determining this bona fide sales price will consider practically every essential which enters into the value thereof, not only its present earning or producing value, but also its future prospects, sometimes designated as good will.

One of the theories of taxation as applied to railroads that has received considerable commendation is that advanced by Hon. Allen Ripley Foote, as follows: Assess a flat rate of 2 per cent on the gross operating revenues regardless of the margin of difference between the total revenue and the operating expenses, this rate to be paid by all whose operating expenses are 90 per cent, or more, of their operating revenues, and add a differential of 1/16 of 1 per cent for each 1 per cent of increase in the margin of difference between total

revenue and total operating expenses in excess of 10 per cent. Such taxes are to be paid to the state, and all or at least part are to be apportioned by the state to each taxing district in proportion to the value for taxation of all other property within such district. This suggestion, if followed, would greatly lessen the amount of work and the expense involved by the railroads in making their tax returns as required by the various states, and would make for greater equality between the states themselves for the assessments would be made upon the same report or one somewhat similar to that now filed with the Interstate Commerce Commission, and the taxes collected would be levied at a flat rate. But it is likely that in years of abnormal business and prosperity it would result in the taxation from railroads being so much above normal, and thereby apparently so decreased in years of adversity and little business as to cause dissatisfaction on account of the fluctuating taxes received, and it is suggested that this might to a certain extent be obviated by assessing the flat rate and differential upon the average earnings or receipts for a term of probably five years or more.

It is obvious that unless a fixed rule or formula is required to be used in determining the taxation or valuation for taxation of a railroad corporation, the officer or body charged with this duty must be vested with broad discretionary powers and must be free from political influence, and should have learning and ability in this special line of work.

No doubt the interstate railroads will in the dim future operate under federal charters and be less subject to the laws and jurisdiction of the states. When this time arrives the federal government with all the information it requires before it will be in a better position to fix and determine the taxation of such corporations than are the several states today.

If it be conceded that railroads should be taxed according to their earnings, and this is now so universally the practice as to be almost conclusive, how shall such taxes be measured? Shall a flat rate be assessed upon the net earnings or upon the gross earnings or shall a system of differentials be used as suggested by Mr. Foote; or shall the net earnings or gross earnings or both be used in determining a taxable value upon which the rate or rates shall be assessed? Applying a flat rate upon the net earnings alone may not adequately tax the corporation which owns a large quantity of tangible property and has low earnings or high operating expenses. Applying a flat rate upon gross earnings may seriously overtax the railroad owning a comparatively small quantity of tangible property and having high operating expenses. It would seem preferable in the event of applying a rate upon net earnings alone without determining a valuation, to use a system of differentials something after the manner of Mr. Foote's suggestion, for in this manner we will arrive at the ability of the railroad to pay.

If, however, a valuation is determined upon which the rate is to be levied, then we should at once eliminate the constant following of a mathematical rule. My own opinion is that railroads should be taxed by a flat rate assessed against a total value to be determined to a great extent through consideration of both the actual net and gross earnings and that for such a purpose the entire railroad should be considered as a unit. This total value should undoubtedly be determined by persons chosen for their ability and experience, and never from political preferment alone. In determining such total value they should be governed by every essential which goes to make the railroad one of the means of transportation. They must remember that railroads are not monopolies to be heckled and taxed out of existence, but that they are essential to the state and stand in the same relation to it as do the veins and arteries to the human body.

Discussion.—The discussion of Mr. Cramp's paper was opened by W. L. Mattoon, real estate and tax agent of the Hocking Valley. He outlined the experience of the railways with a tax on earnings in Ohio, stating that the state tax

commission refused to reduce the taxes of a railway when its earnings fell off. He also expressed himself in favor of federal appraisal of interstate lines for purposes of taxation. H. H. Trabue, real estate agent of the Nashville, Chattanooga & St. Louis, stated that the assessment of the entire property of a railroad as a unit, commended in Mr. Cramp's paper, was the practice in Tennessee and had proved a success. In a discussion of what constituted earnings, H. H. Merrihew, land and tax agent of the Erie, stated that the only part of a railway's income which the Ohio Tax Commission had so far not included in earnings was interest on money on deposit. P. McPherson, right of way and lease agent of the Canadian Pacific, Winnipeg, stated that in Canada there were no Dominion taxes outside of an emergency tax levied during the past year. In the four western provinces the taxation powers for all purposes lie in those provinces. In Manitoba railways pay a three per cent tax on gross earnings and a frontage tax for improvements in municipalities. In British Columbia railways pay one per cent on an assessment of \$10,000 per mile and one per cent on a valuation of \$3,000 per mile on side-tracks in all territory outside of municipal governments. Railway property in municipal territory is subject only to municipal taxation.

EFFECT OF FEDERAL VALUATION ON FUTURE TAX ASSESSMENTS

A. J. Rooney, tax agent of the Chesapeake & Ohio, read a paper on "The Probable Effect of Federal Valuation on Future Tax Assessments of the Railways of the Eastern States." He said in part:

Only a few of the eastern states have ever attempted to formulate any scientific system of taxation. Added to, here and there, with inadequate amendments, the tax laws of many of the states are nothing but a patchwork of temporary expedients framed to meet temporary needs. The railways being the most vulnerable are usually the first to be considered when sources of additional revenue are sought. Generally, the earnings are considered, either in one way or another, and the assessments of the railways are comparatively high. From the standpoint of fairness and justice the answer to the question to be considered may readily be given: Federal valuation should have no effect on taxation, because as a rule the railways are already bearing more than their fair share of the tax burden of the states.

It is safe to say that if rates are prescribed (on the basis of federal valuation) which will prove ample in affording a reasonable return, the railways will not object to an assessment of their property at the true property investment, provided, of course, that other property is assessed at true full value. There is always attached to every commodity or concern which has any intrinsic value at all, a commercial value, and it is upon the commercial value that taxation should be based. The true method of measuring the commercial value of a railway, or any other going concern, is by its earning power—power to make legitimate returns to its owners, and there also lies its ability to pay the taxes which may be levied against it. If by reason of governmental regulation, or otherwise, it is denied the ability to make legitimate returns, its ability to pay taxes is correspondingly reduced.

F. A. Waters, general right of way and tax agent of the Los Angeles & Salt Lake, presented a paper on "The Probable Effect of Federal Valuation on Future Tax Assessments of the Railways in the Western States."

Physical and reproduction value (assuming that this is the value which the federal government is attempting to ascertain) doubtless has some relation to questions of rate making and the issuance of bonds, but for taxation purposes it is useless, and this seems to be the generally accepted theory of all who have given the matter thought.

Property other than that of carriers is valued for assess-

ment purposes on a theoretical basis of what a seller who does not have to sell would take, and what a buyer who does not have to buy would pay; so in equity must a carrier be valued for taxation purposes. There is no doubt but that both buyer and seller of a carrier under such conditions would refer to the physical value, but first, last and all the time the commercial value—the ability of the property to produce revenue—would be the guide for both. If reference is had to the physical value of carriers the assessing body must equalize that value with the value of other property. To establish this comparison, recourse must of necessity be had to their commercial value, because the value of the other property is based upon its commercial worth under the "buyer and seller rule" generally provided by law, and it will be up to the carrier to see that proper comparison is made.

In the discussion of these two papers the consensus of opinion seemed to be that federal valuation would not affect the taxation of railroads in those states where carriers are assessed on the basis of their earnings, but that where railway real estate is assessed by local tax boards it would probably be used to the embarrassment of the railroads, should the values as determined by the government prove to be high.

H. A. Howarth, real estate agent of the Long Island, and a member of the eastern land committee of the Presidents' Conference Committee, presented a paper on the "Present Methods and Future Trend of the Interstate Commerce Commission in the Valuation of Railway Lands." Peter McPherson, right of way and lease agent of the Western Lines, Canadian Pacific, read a paper on "The Organization and Jurisdiction of the Real Estate Department of a Railway in Canada," and a paper by W. L. Lawrence, real estate agent of the Delaware & Hudson, was presented on "The Organization and Jurisdiction of the Real Estate Departments of the Railways in America."

Other features of the program were a paper on "A Method of Numbering and Filing Deeds and Other Papers," by D. M. Taylor, assistant engineer of the Wheeling & Lake Erie; the presentation of a progress report by the Committee on Uniform Practices, and a banquet at which John W. Gorby, cashier of the Central Manufacturing District Bank, Chicago, gave an address on "National Preparedness."

Officers for the ensuing year were elected as follows: President, James P. Nelson, member of the valuation committee of the Chesapeake & Ohio, and member of the eastern land committee of the Presidents' Conference Committee, Richmond, Va.; first vice-president, Frank Taylor, right of way and lease agent, Canadian Pacific, Montreal, Que.; second vice-president, F. C. Irvine, special agent, Pennsylvania Lines, Pittsburgh, Pa.; secretary and treasurer, R. H. Morrison, assistant engineer, Chesapeake & Ohio, Richmond, Va.

The next convention of the association will be held at Duluth, Minn., beginning on the second Tuesday in October, 1917.

WHY THE INTERCOLONIAL RAILWAY IS A FAILURE

The article under this title in the *Railway Age Gazette* of October 13, 1916, page 629, stated that the Canadian Pacific operated 294 miles of railway in Nova Scotia. This statement was misleading since this mileage in Nova Scotia is represented by the Dominion Atlantic which is under lease to the Canadian Pacific for 999 years from 1911, but the results of whose operations are not included in the operating results of the Canadian Pacific.

RAIL SCARCITY IN SOUTH AFRICA.—Owing to the cessation of the supply of rails by Germany, there is a scarcity of light rails and mining trucks in South Africa.

THE CONGRESSIONAL INVESTIGATION OF RAILWAY REGULATION

Plans for conducting the proposed congressional investigation of the subjects of government control and regulation of transportation and of government ownership of public utilities are being made along broad and comprehensive lines by the joint subcommittee of the House and Senate appointed in accordance with Senate joint resolution No. 60, passed at the recent session of Congress. The first hearing before the committee, which is styled the Joint Committee on Interstate Commerce, is to begin on November 20 in the Senate office building at Washington.

A statement outlining the purpose and scope of the investigation by Senator Francis G. Newlands, of Nevada, who is chairman of the committee, has just been mailed to members of the Interstate Commerce Commission and state railroad commissions, commercial, farming and banking organizations and to about 40 economists and publicists, as well as to the representatives of the railroads and their employees. The statement was issued for the purpose of inviting all who are interested in, or have any information regarding the subjects of the inquiry to express their views either by written communication or at the oral hearings, with a view to eliciting the best thought available regarding the matters to be considered by the committee.

While the resolution creating the committee calls for a report to Congress on or before the second Monday in January, it is assumed that an extension of time will be granted and tentative plans have been made for an inquiry that may require nearly two years for its completion. While no definite decision has been reached, it is expected to hold hearings in the principal cities of the country as well as at Washington and the tentative itinerary includes New York, Chicago, possibly Omaha, St. Louis, Kansas City, San Francisco, Portland, San Antonio, possibly New Orleans, and Atlanta. Probably no hearings will be held outside of Washington before the first of the year.

Senator Newlands' preliminary statement says that the subjects to be considered, as stated in general terms in the joint resolution, cover:

First, "... the subject of the government control and regulation of interstate and foreign transportation," including therein specifically:

(a) "... the efficiency of the existing system in protecting the rights of shippers and carriers and in promoting the public interest."

(b) "... the incorporation or control of the incorporation of carriers."

(c) "... and all proposed changes in the organization of the Interstate Commerce Commission and the act to regulate commerce."

Second, "... the subject of government ownership of all public utilities, such as telegraph, wireless, cable, telephone, express companies, and railroads engaged in interstate and foreign commerce," including specifically:

(a) "... the wisdom or feasibility of government ownership of such utilities."

(b) "... the comparative worth and efficiency of government regulation and control as compared with government ownership and operation."

Under the head of government regulation and control, without excluding other questions, attention is particularly called to the following subjects:

"(a) Whether the Interstate Commerce Commission is overloaded and whether its jurisdiction should be confined to questions of discriminations, rebates and rates; its jurisdiction over other subjects, such as valuation, safety inspection, etc., to be turned over to some other body or bureau to be created by law.

"(b) Whether it is necessary to make any change in the organization of the Interstate Commerce Commission with a view to prompt and efficient action; whether it is feasible to increase the number of commissioners and to permit them to divide into several departments for the consideration of cases, and if so whether there shall also be consideration in bank and also whether there shall be appeal from decisions in the department to the commission in bank.

"(c) Whether such departments of the Interstate Commerce Commission shall sit in Washington, or be assigned to definite traffic areas somewhat after the manner of the judicial circuits, and whether in the latter case there should be provision for their sitting in bank at Washington or for some central body in Washington with the duty of hearing appeals and directing the procedure of the departments.

"(d) Whether under the present system the credit of the common carriers is assured with a view to their securing the moneys needed for necessary improvements and extensions in the interest of the public and at reasonable rates of interest. Whether government regulation of the issue of securities is advisable, and if so whether it is to the interest of the public as well as the carriers that this regulation should be exercised by the national government and whether it should involve merely publicity or absolute control of the issue of securities. Whether concurrent jurisdiction of the nation and the states to control such issues is in the interest of the carriers and the public. What will be the field of operations for the state railroad commissions in the interest of the public if the control of securities and the control of rates is vested in the Interstate Commerce Commission. Whether and to what extent within a period of five years it will be necessary to enlarge the facilities of the common carriers in the interests of the public and whether the present system of government regulation is such as to insure the credit of the carriers with a view to their making additional necessary expenditures.

"(e) What is the effect of dual regulation on the parts of the state and the nation of the rates of carriers. What, if any, contradictions does it involve, and what, if any, discriminations does it involve as between states and localities.

"(f) Whether or not any regulation is feasible of the wages and hours of employees of common carriers, and whether or not it is advisable, in the interest of the public and with a view to maintaining uninterrupted commerce between the states, to take any further legislative action regarding the adjustment of disputes between the carriers and their employees and regarding strikes and lockouts.

"(g) Whether any national legislation is required as to the organization of carriers in interstate commerce in the nature of national incorporation, permissive or compulsory, or in the nature of national holding companies under which state corporations may be controlled and unified in their operations in the interest of interstate commerce, and what form of national legislation for the incorporation of carriers or for holding companies owning the stock of state companies, is desirable. How will national incorporation affect the police powers of the states over railroads operating within their boundaries. Will it be advisable, as in the case of national banks, for the national government to prescribe a uniform rule for the taxation by the states of railroad properties and securities."

Under the head of government ownership the following subjects are included:

"(a) The practical results of government ownership both as to efficiency and economy where actually practiced.

"(b) Whether government ownership is compatible with our system of government and what its effect will be on our governmental institutions.

"(c) Whether a system of government ownership will suit local needs.

"(d) A practical method of securing government ownership whether by purchase or condemnation of properties, or by purchase or condemnation of bond and stock issues, or otherwise."

It is stated that: "It is the desire of the committee to give ample opportunity to all interested in or having any relation to the subject matter of the proposed inquiry to express their views. But the committee would like early notice of the subjects to be discussed by the various persons appearing before it, so that the hearing can be, as far as practicable, in orderly sequence as to subjects. The purpose of the committee is to hear regarding government regulation and government ownership the opinions of economists and publicists of eminence, representatives of the Interstate Commerce Commission, the National Association of State Railroad Commissioners, state railroad and public utility commissions, representatives of the railroad executives and labor organizations, representatives of farming organizations, and farmers, shippers, and bankers, representatives of chambers of commerce, and other important business and industrial organizations."

"The views of all who are interested or have information regarding the foregoing questions are invited by the committee, either by written communication or at the oral hearings."

"It is suggested that with a view to maintaining a logical sequence in the hearings those participating therein classify their remarks according to the foregoing subheads as far as practicable."

Senator Newlands in his statement points out that the initiative of the proceeding was taken by President Wilson in his message to Congress on December 7, 1915, in which he said in part:

"The transportation problem is an exceedingly serious and pressing one in this country. There has from time to time of late been reason to fear that our railroads would not much longer be able to cope with it successfully, as at present equipped and coordinated. I suggest that it would be wise to provide for a commission of inquiry to ascertain by a thorough canvass of the whole question whether our laws as at present framed and administered are as serviceable as they might be in the solution of the problem. It is obviously a problem that lies at the very foundation of our efficiency as a people. Such an inquiry ought to draw out every circumstance and opinion worth considering, and we need to know all sides of the matter if we mean to do anything in the field of federal legislation."

The resolution was introduced in the Senate and, after amendment by including the investigation of government ownership, was adopted by both houses of Congress and was approved by the President on July 20. The following members of the Interstate Commerce Committee of the Senate and of the House Committee on Interstate and Foreign Commerce were appointed members of the subcommittee: Senate, Francis G. Newlands, Nevada; Joseph T. Robinson, Arkansas; Oscar W. Underwood, Alabama; Albert B. Cummins, Iowa; Frank B. Brandegee, Connecticut; House, William C. Adamson, Georgia; Thetus W. Sims, Tennessee; William A. Cullop, Indiana; John J. Esch, Wisconsin; Edward L. Hamilton, Michigan.

The committee held a meeting on September 6 and organized by selecting Senator Newlands as chairman and Representative William C. Adamson, who is chairman of the House Committee on Interstate and Foreign Commerce, as vice-chairman. The committee is empowered to summon witnesses and to require the various departments, commissions and other government agencies of the United States to furnish such information and render such assistance as may in its judgment be desirable. The sum of \$24,000 has been appropriated for its expenses.

GERMAN ELECTRIC RAILWAY SYSTEMS.—Aix-la-Chapelle has the third largest electric railway system in Germany. Greater Berlin leads with a total of 408 miles, Hamburg ranks second with 117 miles, while Aix-la-Chapelle has 112 miles.

CONVENTION OF MAINTENANCE OF WAY MASTER PAINTERS

The thirteenth annual convention of the Maintenance of Way Master Painters' Association of the United States and Canada was held at the Hotel Walton, Philadelphia, October 17 to 19 inclusive with an attendance of about 40 members together with representatives of a number of paint manufacturers. The meetings showed a marked improvement over last year's convention both as to the attendance and the scope of the program.

Thomas B. Smith, mayor of Philadelphia, and Charles E. Tryon, representing the Philadelphia Chamber of Commerce, gave addresses of welcome. In his address as president, F. C. Rieboldt, master painter, Chicago, Milwaukee & St. Paul, recommended certain changes in the constitution and by-laws, which would expedite the business of the association. He also referred to a movement on foot to bring about an amalgamation with the American Railway Bridge and Building Association. This matter was referred to a special committee for consideration and report.

L. P. Nemzek (John Lucas & Company) presented a paper on "Preservative Coatings for Iron and Steel," in which he recommended and gave reasons for the advantages of basic lead chromate in place of the commonly used oxide, red lead. H. A. Gardner (Institute of Industrial Research) gave an illustrated lecture on "Physical Characteristics of Pigments and Paints," which included reference to the possibilities of kukin oil, the oil of the soya bean and perilla and china wood oils. Pigments were considered from the standpoint of hiding power, oil absorption, opaqueness, suspension, etc. He prefers red lead containing 15 per cent of litharge. In commenting on this, A. H. Sabin (National Lead Company) stated that this amount of litharge was an advantage in a paint to resist water because the film was necessarily thicker. H. B. Wilson (B. & L. E.) raised an objection to this ingredient in that it had a tendency to settle in the pot and required constant stirring.

Three papers were presented which covered the subject of fire resisting properties of paint, one by W. A. Clapp (Clapp Fire Resisting Paint Company) on "Fire Resisting Paints," another by G. F. Johnston (Pyroline Products Company), entitled "Reducing Fire Losses." A third is abstracted in another column. In discussion of these papers, H. A. Gardner expressed the view that any good paint containing a mineral pigment has fire resisting properties, since after the oil is driven off by the heat the surface is covered with a coating of purely mineral substances. E. H. Brown (Painters' Magazine) stated that he had found a heavy coat of lime whitewash, when protected from the weather, to be a good resistant. A number of the members spoke of their experience with various formulae containing white wash as the principal ingredient.

The position of the master painter in relation to his men and to the railroad was discussed at some length following an outline presented by H. E. Conrad (P. R. R.).

Papers were also presented on the following subjects: "What the Association Has Done for the Railroads," by A. B. Phelps (N. Y. C.); "The Influence of Pigments on Paint Permanency," by Malcolm McNaughton (Joseph Dixon Crucible Company), and "Sanitary Value of Paints," by E. W. Lutes (Sherwin-Williams Company). Three other papers are given in abstract below.

ADMINISTRATION OF THE MAINTENANCE PAINTING OF BRIDGES

By W. S. Lacher

Assistant Engineering Editor, *Railway Age Gazette*

The length of the intervals between the repaintings of bridges is governed by no definite law. One road reports the interval as one, two or four years; another as 8 to 10 years;

and a third as 5 to 15 years. Climatic conditions have a large influence. Another factor is the variation in the amount of attention given the bridges. On some roads, unfortunately, they are not repainted until the previous coat has almost disappeared. On other lines, the complete repainting is deferred at a material saving by the systematic touching up from time to time of the parts subject to the quickest deterioration. On the Santa Fe it is the practice to repaint or retouch a bridge whenever the weather coat has deteriorated sufficiently to expose the body coat underneath, the idea being to avoid if possible the removal of the body coat. The expense of cleaning off rust is thus very largely avoided.

The decision to repaint a bridge is determined almost universally by the condition of the structure rather than by the interval since the last painting, the condition being determined by inspections as carried out according to various schedules. These inspections are usually made individually or jointly by master carpenters, engineers maintenance of way, bridge inspectors, or bridge engineers, at least once each year. On the Canadian Pacific the division superintendents and the division engineers inspect all bridges in the fall, while the resident engineers and the master carpenters give all truss bridges and high viaducts an additional inspection in the spring. On the Chicago & North Western, independent inspections and recommendations are made by the general bridge inspector or his assistants, and the division maintenance officers, the two sets of recommendations being checked against each other in determining the work to be authorized. On the Burlington, all steel bridges of any importance are inspected personally by the bridge engineer.

As a rule the repainting of a bridge is authorized as a part of the annual bridge maintenance budget, which gives authority in detail for the individual structures. A less common practice is to provide a sum for bridge painting by divisions, leaving the detailed distribution to the division engineer maintenance of way or the master carpenter.

Most roads do maintenance bridge painting with company forces, generally under the direction of the division master painter. The work is usually done by a division paint gang, which paints all classes of structures, as there is rarely enough work within the limits of the district ordinarily covered by a single division organization to keep a gang of bridge painters constantly at work on steel bridges. There are several disadvantages to this plan. House painters do not like bridge painting, particularly the work of cleaning off rust. They are not as skillful as the regular bridge painters in swinging, staging or moving around on high structures. To obtain the latter class of men, some roads organize temporary bridge painting gangs every season, a reliable experienced man usually being kept on the permanent force to hire the men and supervise the work.

On the Chicago & Alton, a combination of the two schemes is used, a special steel paint gang being organized only when there is a considerable amount of this work to be done. The Michigan Central maintains two permanent bridge painting gangs, one working in the United States and the other in Canada. The New York Central has general paint gangs on branches where the bridge and building work is under the direction of a single supervisor, and separate steel paint gangs on main lines where the bridges and buildings are generally handled by separate supervisors.

Whenever repair work is done on steel bridges, it is common to have the iron bridge men do any touching up or spot painting that may be necessary. The Chicago & North Western has used iron bridge men successfully on complete repainting jobs. These men are more agile and skillful in moving about in high places and are said to work faster. The Baltimore & Ohio lays particular emphasis on these qualifications in the selection of bridge painters.

Several roads contract all or a part of their maintenance

bridge painting. This does away with the need of an organization for that purpose, the nucleus of which must be held over during the slack season. The same influences have been felt on this work which have caused the tendency towards contract work in other branches of the maintenance of way department, chief among which is the greater latitude allowed a contractor in the payment and selection of his men.

The Chicago & North Western has a large part of the bridge painting done by contract, the contracts being let by the engineer maintenance of way in units of a season's work for one division. The division engineer appoints an inspector, who is kept on the work constantly and the work is also given considerable attention by the division engineer and the master carpenter. This arrangement has proved satisfactory. The contractor furnishes the labor and equipment and the railroad company supplies the paint.

The Chicago Great Western has had a contract in effect for some time which is to be continued indefinitely until cancelled at the option of the railroad or the contractor. Under this arrangement the contractor is required to paint any steel structure whenever the repainting is authorized, at an established price, which is on a tonnage basis for bridges and on a square foot basis for sheet metal work, such as coaling stations. The price includes a guarantee to maintain the paint on each structure for a period of 10 years from the date of painting it.

SAFETY FIRST

By M. F. Ebel

Master Painter, Cincinnati, Hamilton & Dayton, Hamilton, Ohio

In painting the interior of water softener tanks, care should be taken to provide ventilation so that all fumes from the paint can escape. Steel water tanks should be treated in the same way. Open lights or torches should be kept away from any material of a volatile nature. This applies also to cars containing paint materials and where possible a keg of sand should be kept in a convenient place, with a scoop that can be used readily to cover a fire with the sand.

All ropes, hooks, planks and ladders should be inspected from time to time, particularly at the time of taking them from the car. There is always a chance that something may have been injured, cracked or broken in moving it from the preceding job.

In washing interior walls and woodwork in station or other buildings that are wired for electric light, it is always well to turn off the current before starting the work, especially around sockets or connections. The use of a wet sponge in such a place may give a man a sufficient shock to throw him off a scaffold.

As in the case of all other railway employees, caution must be exercised in the use of hand, motor or push cars on the main tracks. Whenever there is any question as to the safety of the use of the car, as when handling a loaded push car, it must be protected both front and rear by flags.

APPLICATION OF FIRE RESISTING PAINT

By H. J. Barkley

Master Painter, Illinois Central, Carbondale, Ill.

Generally speaking, fire resisting paints are divided into two general classes, one with a coal tar base and the other with a linseed oil base. A class by itself is the so-called "water glass" and common white wash which was for years put on the insides of covered wooden bridges, a type of bridge that has almost ceased to exist.

The St. Louis division of the Illinois Central has a large number of open deck wooden trestles on branch lines, which we started to coat with fire resisting paint in 1913. Both types of paint have been used since, and not a single dollar has since been lost by fire on any of the structures so treated.

Previous to that time fires on such structures were frequent, causing a loss in time, traffic and money.

We found the best tool to be a half worn four-inch wall brush made into a hatchet brush with a diagonal handle about four feet long. The coal tar product has to be heated, which is done in a 50-gal. iron kettle on the bank at the end of the bridge. Only the top and two sides of the guard rail and ties, the tops of stringers, caps and sub-sills where they are not covered with sheet metal, are coated. After a three years' trial we find that both types of paint have their advantages both as to covering capacity, permanency, and to actual fire resisting qualities, for which we have tested them both in several ways.

Generally speaking, one gallon is figured for every four lineal feet of bridge. The temperature will affect the amount of material to some extent, as will also the size of the ties and whether they are surfaced or not.

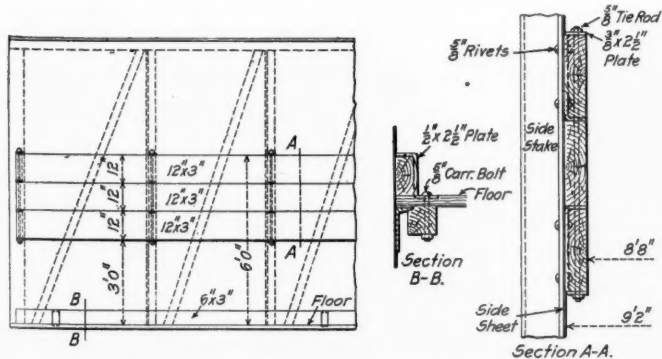
The term "fire resisting" is often misused. A government report says that "There is no known way of making wood absolutely fire proof," but it is a fact that we can reduce the fire hazard to a great extent, as has been proved by demonstrations and by actual use. We know absolutely that coals of fire from a locomotive ash pan have caused countless fires and we also know that we can stop that kind of loss. A heavy timber structure in flames is another matter, but is a condition seldom encountered. In other words, fire resisting paints seem to be a preventive rather than a cure.

It is my prediction that a greater amount of fire resisting paints will be used in the future on timber bridges, coal chutes and like structures, not only on railroads but in factories and the home.

BELT RAIL APPLIED TO UNION PACIFIC ALL-STEEL AUTOMOBILE CARS

The Union Pacific has 600 all-steel automobile cars which were built with the sheathing inside the frame. They were provided with no means of securing shoring for the lading other than the wooden floor, no provision being made for nailing wooden blocks to the side walls on the interior of the car.

A thorough investigation was made of the various methods



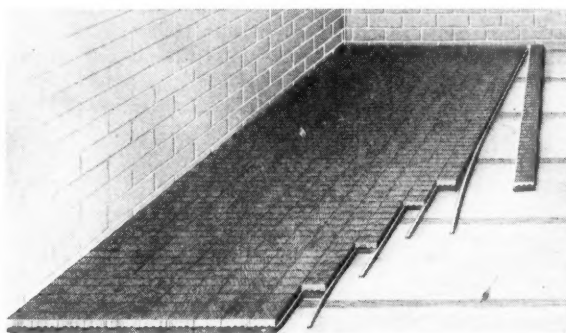
Wooden Belt Rail and Floor Stringer for Union Pacific All-Steel Automobile Cars

employed by automobile shippers for applying double deck loads. It was found that each automobile shipper has his own system of double decking, all of which provide for the making up and carrying in stock of certain sizes of timbers and blocks suitable for application to any wood lined automobile car. When the shipper wishes to double deck a car he picks out the several pieces which enter into the construction of the deck, all cut to size, and secures them to the interior of the car by nailing to the sides. The all-steel automobile cars did not afford nailing facilities on account of

the steel lining and the wooden belt rail and floor stringer shown in the drawing were designed and applied to a car. This was passed upon by the shippers and was found to be satisfactory from the standpoint of automobile loading. It is also an advantage in loading other commodities, as it provides means for blocking bulky freight. The arrangement is now being applied to the rest of these cars.

A NEW FLOORING

"Bloxonend" is the name of a new wood block floor that carries its own base. Small wood blocks, 1 1/2 in. by 3 1/2 in. in section, are set on end and dovetailed to a base board. Bloxonend comes in strips, about eight feet long, and is manufactured in several standard combinations. The "two over one" section is a combination of 2-in. blocks on a 1-in. base board. It can be made in special sizes with thicker base if required for floors carrying extra heavy weight, built for heavy trucking. For mill constructions it comes in laminated

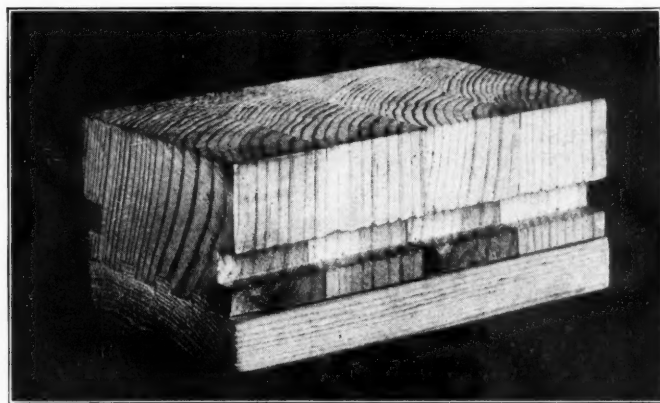


Method of Laying the Floor

flooring up to 16 ft. with the blocks on the top edge, thus doing away with the necessity of laying a hardwood floor on top.

This new flooring can be laid exactly like ordinary wood flooring. It can be laid directly on joists or over old floors; no special foundation is required. The sections are grooved for splines and can be easily and tightly joined.

The purpose of this flooring is to combine the rapid laying advantage of the tongue and groove type with the good qualities of a wood block flooring as to durability, smoothness,



A Section of the Flooring

quietness and resilience. It is contended that it is suitable for a variety of purposes, applying in the case of railway installation to freight houses, station platforms, baggage rooms, shops, etc. Bloxonend is the invention of C. J. Carter, and is manufactured by the C. J. Carter Lumber Company. Marsh & Turman Lumber Company, Chicago, Ill., are sales agents.

General News Department

Postmaster General Burleson has announced that he will give to anyone who is willing to take the chance, and furnish proper equipment, opportunity to start an aeroplane mail route.

A special committee was called by the Chicago council committee on railway terminals on October 16, to bring representatives of the railroads, contractors and labor unions together in an effort to settle the strike which has tied up work on the new union station in Chicago.

The Interstate Commerce Commission has announced a further hearing and oral argument at its office in Washington on October 30 on the commission's order requiring the equipment of locomotives with high power headlights, the effective date of which was recently postponed until January 1.

The Marietta, Columbus & Cleveland has sent out a circular announcing the permanent suspension of operation. By order of the court of common pleas of Washington County, Ohio, passenger, mail and express service were ordered suspended after October 10, and freight service after October 31.

Several men were killed and a number seriously injured when a train of the Chicago, Burlington & Quincy collided with a caboose of a stock train on the same road near Elwood, Neb., on October 15. The trains in question were sections of a stock train and lack of lights and warning signals are given as the cause of the accident.

The coach, cab and tender shop of the Pittsburgh & Lake Erie at McKees Rocks, Pa., was seriously damaged by fire early in the morning of October 13. Several baggage and caboose cars, which were in the shop undergoing repairs, were totally destroyed and a number of machines were damaged. The total loss is estimated at \$50,000.

In the Federal Court at Philadelphia, October 12, the Bulah Coal Company was awarded \$49,711 as a penalty to be paid by the Pennsylvania Railroad for discrimination in furnishing cars to the coal company. The Interstate Commerce Commission had awarded the coal company, \$65,184, but the railroad company contended that the amount was excessive; and the present verdict is the result of its suit against the coal company in the District Court.

Associate Justice Stafford of the Supreme Court of the District of Columbia on October 12 issued an order in conformity with his decision reported in last week's issue directing Milton H. Smith, president; Addison R. Smith, vice-president, and George W. Jones, attorney of the Louisville & Nashville, to answer questions of the Interstate Commerce Commission regarding expenditures of the road for political purposes. Counsel for the Louisville & Nashville have notified the commission that they will appeal from the decision to the United States Supreme Court.

A. O. Wharton, St. Louis representative of the American Federation of Labor, has given out a statement to the effect that the majority of shop employees of six different unions, working on 26 railroads in the west, have voted to refuse the compromise offer of the roads to the men's demands for an increase of five cents an hour and an eight-hour day. The roads propose to increase wages by two and one-half cents an hour and to grant the eight-hour day to men on stationary work. Negotiations, it is said, will be continued by the organized employees and the companies involved.

Chicago Switchmen's Controversy

The 14 midwestern roads centering in Chicago and the Switchmen's Union of North America have agreed to arbitrate on the switchmen's demands for increased wages and shorter hours. The roads have appointed as arbitrators E. F. Potter, assistant to the general manager of the Minneapolis, St. Paul & Sault Ste. Marie, and T. W. Evans, assistant general manager of the New York Central. The switchmen have chosen

J. B. Connors, their assistant to president, and W. A. Titus, their vice-president, as representatives. The four were to meet and elect two neutrals, but these last two are not yet named. Should these four fail to elect two neutrals the United States Board of Mediation and Conciliation will appoint them, and then these six will constitute a board to settle the dispute. W. L. Chambers, of the United States Board of Arbitration and Conciliation, suggested the election of the two neutrals.

More About the Car Situation

In the editorial on this subject in the *Railway Age Gazette* of October 13, 1916, page 622, the statement concerning the exports for the first seven months of this year should have read as follows: "Our exports for the first seven months of 1916 amounted to \$2,926,000,000, as compared with \$1,970,000,000 for 1915 and \$1,201,000,000 for 1914."

Conference on the Adamson Law

Warren S. Stone, A. B. Garretson, W. G. Lee and W. S. Carter, who recently asked the railroads to arrange a conference to determine how the Adamson law shall be applied, received an answer a few days ago from Elisha Lee, chairman of the railroads' conference committee of managers, in which Mr. Lee said:

"We are still in considerable doubt as to the meaning of the law, and are endeavoring to solve various questions that have arisen in connection therewith. As soon as we determine the meaning of the law we will call a meeting of the railroad officials and put your request before them."

Texas Railroads Reply to Attorney General

Attorneys for the Texas railroads have filed in the district court at Austin, Tex., a replication to the answer filed by the attorney general of Texas in the case in which the roads have sought an injunction against the order of the Texas Railroad Commission withdrawing advances in intrastate rates which it had previously allowed. The replication is filed for the purpose of denying a number of charges made by the attorney general, one of which was that since the railroads have received land grants from the state they are estopped to question the power of the state to regulate their rates. It is pointed out that no act of the Texas legislature was ever passed or could be legally passed to deprive them of the right of compliance with orders of the Interstate Commerce Commission made under an act of Congress or of the right to assert that any order of the Texas Railroad Commission is unjust, unreasonable, unfair or confiscatory. It is also pointed out that while land grants were made to some railroads at a time when the lands were of but little value (and on certain conditions—that the company should survey two sections, the alternate section to belong to the state and that each railway should construct a given mileage of line) that all roads receiving such grants have fully complied with the terms thereof; that all such lands have long since been alienated and that none of the carriers, party to the suit, now own such lands.

In reply to a statement that under a law passed in 1853 the state has the right to acquire properties of the railways, it is contended that the act has been repealed by the revised statutes of 1879, 1895, 1911 and expressly repealed by the act of January 26, 1860. Denial is emphatically made that rate divisions between Texas lines and so-called parent corporations are unfair to Texas companies. In reply to the charge made by the attorney general that the issuance of free passes has dissipated their revenues, it is pointed out that substantially 69.1 per cent of the total free transportation represents travel by employees and their families, 24.3 per cent represents exchange transportation issued to representatives of other railroads, 1.7 per cent represents mileage traveled by public officers, 0.4 per cent mileage traveled by public officers of the United States, postal employees and others,

1 per cent represents transportation in exchange for advertising and 2.4 per cent transportation legally permissible under the head of charity, religion and similar purposes.

Advisory Commission on National Defense Appointed

President Wilson has announced the appointment of the advisory commission to be associated with the Council of National Defense for which a provision was included in the army appropriation bill recently passed by Congress, as noted in the *Railway Age Gazette* of September 15, page 452. The members of the commission are Daniel Willard, president of the Baltimore & Ohio; Samuel Gompers, president of the American Federation of Labor; Dr. Franklin H. Martin, of Chicago; Howard E. Coffin, of Detroit; Bernard Baruch, of New York; Dr. Hollis Godfrey, of Philadelphia, and Julius Rosenwald, of Chicago.

The Council of National Defense consists of the secretaries of war, navy, interior, agriculture, commerce and labor, and was created "for the co-ordination of industries and resources for the national security and welfare." The act provides that the council should nominate for appointment by the President an advisory commission of not more than seven persons "each of whom shall have special knowledge of some industry, public utility or the development of some national resource or be otherwise specially qualified." The duties of the council are, in part, "to supervise and direct investigations and make recommendations to the President and the heads of executive departments as to the location of railroads with reference to the frontier of the United States, so as to render possible expeditious concentration of troops and supplies to points of defense; the co-ordination of military, commercial and industrial purposes in the location of extensive highways and branch lines of railroad."

In announcing the appointment President Wilson said:

"The personnel of the council's advisory members, appointed without regard to party, marks the entrance of the nonpartisan engineer and professional man into American governmental affairs on a wider scale than ever before. It is responsive to the increased demand for and need of business organization in public matters and for the presence thereof of the best specialists in their respective fields. In the present instance, the time of some of the members of the advisory board could not be purchased. They serve the government without remuneration, efficiency being their sole object and Americanism their only motive."

Railway Workers Attack Eight-Hour Law

The Railway Workers' Non-Partisan Association, which is said to have 16,000 members, on October 17 announced its opposition to the Adamson eight-hour law. Through its national chairman, W. J. Pinkerton, of Chicago, a letter was sent to W. G. Lee, president of the Brotherhood of Railroad Trainmen, in which the law is described as "the death knell of the economic organizations, the railroad brotherhoods," and a demand is made that it be repealed and a convention called to make an investigation.

Mr. Pinkerton is a member of Lodge 752 of the Trainmen's Brotherhood at Chicago. As leader of the anti-Lee faction in the brotherhood, he came very near defeating Lee for president three years ago. The Railway Workers' Non-Partisan Association, of which he is president, was formed four years ago to oppose the Bradley Federal compensation law which failed to pass.

The letter, in addition to bringing out the points mentioned above, says that the brotherhood representatives in accepting the Adamson law from Congress traded certainty for uncertainty. The letter further points out that through the machinations of Eugene V. Debs, the old American Railway Union was changed into a political machine. The letter then says:

"I now ask this question, Why did the brotherhood representatives, with over a 90 per cent strike vote, permit their grievances to become congressional matter without giving the membership an opportunity to investigate the facts, as in the case of the compensation law, by applying each section of the proposed law to existing schedules and rights?"

"Our representatives accepted a law. Why? The answer is, I must assume, because the railroad managers called their hand, and with a 90 per cent strike vote they lacked the courage to accept the challenge and in seeking a way to escape handed our union affairs over to politicians."

Argument in the Coal Suits

Arguments were presented in the Supreme Court last week in the suits of the government against the Reading Company and affiliated companies and the Lehigh Valley and affiliated companies on charges of attempted monopolization of the anthracite coal business in violation of the anti-trust law and of violations of the commodities clause of the Interstate Commerce law. Both cases were appealed from decisions of the lower courts, which had partially sustained and partially dismissed the charges in the Reading case and had dismissed the Lehigh Valley case. The government was represented by Solicitor General J. W. Davis and Assistant Attorney General G. C. Todd. Arguments in the Reading case were begun on October 10 and in the Lehigh Valley case on October 12. In the Reading case the government charges that the Reading Company by its control of the Philadelphia & Reading Railway, the Central Railroad of New Jersey, the Philadelphia & Reading Coal & Iron Company, the Lehigh & Wilkes-Barre Coal Company and the Lehigh Coal & Navigation Company monopolizes the production, transportation and sale of anthracite coal from mines in the Schuylkill region tributary to its lines, and that the combination controls 63 per cent of the entire anthracite deposits, with the result of destroying every motive for competition between the railroads and the coal companies in the transportation and sale of coal. In time, it was argued, this combination, if not dissolved, will own or control every ton of commercially available coal known to exist, because the deposit supply will outlast many years that of any other producer. The railway is charged with extorting excessive freight rates from shippers and with granting preferences and rebates to the Reading Coal Company. The government asks that the several coal companies and railroads constituting the combination be completely separated from each other and be erected into independent units. The lower court had upheld the government to the extent that it ordered the separation of the Philadelphia & Reading Coal & Iron Company and the Lehigh & Wilkes-Barre Coal Company by requiring the Central Railroad of New Jersey to dispose of its securities of the Wilkes-Barre Coal Company.

In the second case the government contends that the Lehigh Valley Railroad, through the Lehigh Valley Coal Company and other subsidiary coal companies whose stock it owns, has monopolized the production, transportation and sale of anthracite coal from points located along its lines, by rebates and other preferences to the coal companies by the preferential extension of credit, by the charging of extortionate freight rates to independent shippers and in other various ways. It is contended by the government that the Lehigh Valley Coal Sales Company is a mere device designed to circumvent the commodity clause. The court is asked to compel the railroad company to dispose of the stocks of the coal companies to persons who are in no way under its control or influence, and that the contract between the railroad and the coal sales company be annulled.

The Reading interests were represented by Jackson E. Reynolds, Charles Heebner and John G. Johnson and the Central of New Jersey by Charles E. Miller and Robert W. De Forest. The attorneys for the Reading in their argument denied the charge that the company has monopolized the production, transportation or sale of anthracite coal, pointing out that there have been practically no additions to their coal properties since the passage of the anti-trust law, that eight powerful railroads entirely independent of Reading influence still serve the anthracite regions, that the company, while employing its powers for the legitimate purpose of conserving its own property, has done so with no intention to do wrong to the general public or to restrict the rights of individuals and at the same time has promoted and developed commerce and trade; that the public would be injured by the disruption of the alliance between the Reading and the Central of New Jersey, which, it is argued, it is clearly in the public interest to foster as a strong and active competitor for the Pennsylvania and other trunk lines. The government's statements as to the percentage of the unmined coal which the company controls are ridiculed and it is asserted that the profits from the sale of coal have averaged only 18½ cents a ton. It is denied that the Reading Company has restrained trade by its ownership of stock in one corporation engaging in the production and sale of coal and the stock in another engaged in its transportation, for the two industries are not in competition and the Reading Company has merely co-ordinated

two complementary enterprises, thereby promoting and stimulating trade and commerce. It is declared that the Reading Company's indirect influence over the Lehigh & Wilkes-Barre Coal Company is only incidental and a negligible consequence of the acquisition of the majority of the shares of the Central of New Jersey, that the consolidation of two such mining corporations as the Philadelphia & Reading Coal & Iron Company and the Lehigh & Wilkes-Barre Coal Company would not be contrary to public policy, that the autonomy of the two coal companies has been preserved and their competition with one another and other coal producers has continued unrestrained. It is asserted that the Reading and Central of New Jersey are not and never have been in competition for the same passengers or the same shipments from the same points of origin to the same destinations, but that they are complementary the one to the other, and finally, that, in view of the entire autonomy of the three Reading companies, there is no predicate for contention that the railway company is transporting coal mined or produced by it or in which it has any interest, direct or indirect.

The Lehigh Valley companies were represented by E. H. Boles, F. W. Wheaton and J. G. Johnson.

Car Foremen's Association of Chicago

The Car Foreman's Association of Chicago held its annual meeting at the Hotel La Salle, Chicago, October 10, at which the officers were elected for the ensuing year, and an entertainment program was provided for the members and their guests. During the past year the association has had an average attendance of 169 members. During the year 921 new members were enrolled in the organization, making a total membership of 2,535, which makes this association the largest body of car men in the country. Of the 921 new members, 535 were brought in by 29 members, and one member brought in 63 new members. The entertainment was in charge of the entertainment committee of which W. E. Sharp, president of the Grip Nut Company was chairman. It was especially unique and interesting, consisting of a one-ring circus of 10 acts, in which real animals and circus men were the performers, a sleight-of-hand artist and dancing. There was such a large number in attendance at the meeting, there being about 1,500 present, that it was necessary to give two performances of the circus to accommodate all of the number, each performance lasting one hour. The following officers were elected for the ensuing year: President, A. L. Bardsley, division master mechanic of the Atchison, Topeka & Santa Fe, Chicago; first vice-president, H. H. Estep, general foreman of the car department, Chicago & Eastern Illinois; second vice-president, E. G. Chenoweth, mechanical engineer for the car department, Chicago, Rock Island & Pacific; treasurer, M. F. Covert, assistant master car builder, Swift Car Lines, and secretary, Aaron Kline, 841 Lawler avenue, Chicago.

Smoke Prevention Association

At the eleventh annual convention of the Smoke Prevention Association, which was held at the Planters Hotel, St. Louis, September 26 to 29, the following officers were elected for the ensuing year: President, W. H. Reed, chief smoke inspector, City of Chicago; first vice-president, Marten Rooney, chief smoke inspector, City of Nashville, Nashville, Tenn.; second vice-president, W. L. Robinson, supervisor fuel consumption, Baltimore & Ohio; secretary-treasurer, A. A. Chambers, of the Smoke Inspection Bureau, City of Chicago. Columbus, Ohio, was chosen as the next convention city.

Bridge and Building Association

The annual convention of the American Railway Bridge and Building Association was held in New Orleans October 17-21. At the election on Thursday morning C. E. Smith, consulting engineer, St. Louis, Mo., was elected president. One hundred and fifty members were present and 30 supply firms had exhibits. A full report will be published in next week's issue.

Association of Manufacturers of Chilled Car Wheels

At the annual meeting of this association, in New York, on October 17, the following officers were elected: George W. Lyndon, president and treasurer; E. F. Carry, Haskell & Barker Car Company, vice-president; J. A. Kilpatrick, Albany Car Wheel Company, vice-president; Geo. F. Griffin, secretary, and F. K. Vial, Griffin Wheel Company, consulting engineer.

International Railway Fuel Association

The ninth annual convention of the International Railway Fuel Association will be held at the Hotel Sherman, Chicago, May 14, 15, 16 and 17, 1917.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Annual convention, October 19-21 New Orleans, La.
- AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, general secretary, 75 Church St., New York. Next meeting, November 15, 1916, Brown Palace Hotel, Denver, Colo.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Next meeting, December 12-13, 1916, Atlanta, Ga.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cincinnati Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Next annual meeting, December, 1916, Waldorf-Astoria Hotel, New York.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial-Annex Hotel, Pittsburgh.
- RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Commissioner of Agriculture, St. L., Iron Mt. & So., 1047 Railway Exchange Bldg., St. Louis. Next meeting, November 9-10, La Salle Hotel, Chicago.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ST. LOUIS RAILWAY CLUB.—R. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Annual meeting, October 18-20, Hotel Raleigh, Washington, D. C.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.
- TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Annual convention, October 24-27, Hotel Sherman, Chicago.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco. Annual meeting, November 15, Brown Palace Hotel, Denver, Colo.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.
- WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

Twenty members of the freight traffic department of the Wabash were in New York last week inspecting terminal facilities and methods of handling freight in New York and vicinity.

J. W. Terry, general attorney of the Gulf, Colorado & Santa Fe, and H. M. Garwood, general attorney of the Sunset Central lines, have addressed a letter to H. H. Haines, traffic manager of the Galveston Commercial Association, stating that a committee of the traffic officers of Texas railroads and the attorneys would be glad to meet a committee of representatives of the shippers appointed by the Texas Industrial Traffic League to discuss the proposal by the committee that the railroads join with it in attempting to formulate some compromise with a view to preventing continued litigation in the Shreveport rate case. The suggestion is made, however, that before an attempt is made to mediate the differences between the Texas Railroad Commission and the carriers, the shippers and commercial organizations reach an agreement on some plan as an appropriate basis.

Conferences were held at Little Rock, Ark., early in the week between railroad representatives and members of the Arkansas Railroad Commission in an attempt to reach an agreement with reference to standard distance tariffs recently put into effect by the railroads. The tariffs which will apply to lumber, logs and rough rice were filed by the railroads claiming authority under a decision of the Interstate Commerce Commission affecting rates between Arkansas points and Memphis, Tenn., and are higher than the tariffs covering the same commodities authorized by the Arkansas commission. The Chicago, Rock Island & Pacific and the St. Louis, Iron Mountain & Southern, which are the roads affected, filed a suit in the United States District Court last week to enjoin the commission from enforcing the rates it approved. If an agreement was not reached in the conference, the case will be fought out in the courts.

Traffic officers representing the principal transcontinental railways had an informal conference with members of the fourth section board of the Interstate Commerce Commission at Washington last week for the purpose of obtaining a better understanding of the commission's ideas as to the adjustment of transcontinental freight rates. The new tariffs filed with the railways to become effective on September 1 in accordance with the commission's order rescinding the relief granted under the fourth section on account of the reduction of water competition via the Panama Canal, have been suspended by the commission until December 31. Meanwhile the railways have been trying to come to an understanding with the shippers which will narrow the issues to be passed on by the commission. The railways are also anxious to expedite the proceedings as much as possible, and it is expected that the commission will fix a date for a hearing at an early date.

Studying Georgia Freight Rates

The Georgia State Railroad Commission, in its studies of the freight rates of the state, preparatory to formulating an opinion on the application of the railways for authority to make advances, appears to have laid out a program covering several months. Hearings were begun several weeks ago, and many sessions are yet to be held. The last announcement calls for hearings this week on special commodity rates, subjects 28 to 42, as follows:

Monday—28, fruits and vegetables; 29, watermelons.

Tuesday—30, trees and shrubs; 31, agricultural cultivating implements; 32, agricultural implements, farm wagons, etc.

Wednesday—33, agricultural implements and vehicle material; 34, roofing material; 35, roofing slate; 36, Sea Island cotton, c. l. and l. c. l.; 37, cotton seed.

Thursday—38, cotton seed oil; 39, cotton seed hulls; 40, cotton linters and regins.

Friday—41, fertilizers and fertilizer materials; 42, phosphate rock.

The present branch of the hearing will, it is estimated, extend into November, after which the commission will take a recess of about 30 days on the rate case, so as to attend to other duties.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has further suspended until April 13, 1917, proposed increases in lumber rates to New York via Southern Pacific Atlantic Steamship Lines.

The commission has further suspended from October 29 to April 29 proposed increased rates on hogs in carloads from St. Paul and points taking the same rates to Chicago.

The Interstate Commerce Commission has suspended, from October 7 to February 4, 1917, the provisions in a tariff filed by F. A. Leland making changes in the carload minimum weights on grain and wheat flour.

The commission has suspended from October 13 and 23 to February 10, 1917, tariffs providing for the withdrawal of class rates on vegetables from points in Georgia to Oklahoma City and other destinations west of the Mississippi river.

The commission has further suspended from October 18 until April 18, 1917, tariffs providing for increased charges on fresh meats and packing house products forwarded in peddler cars between points in Central Freight Association territory.

The Interstate Commerce Commission has further suspended from October 13 until April 13, 1917, tariffs providing for increased switching charges between industries located on the Johnstown & Stony Creek and points of interchange with the Pennsylvania and Baltimore & Ohio.

Application has been filed with the commission by the officers of the Marietta, Columbus & Cleveland which has a line from Marietta to Palos, Ohio, 44 miles, for permission to cancel its tariffs, in accordance with a court order requiring the sale of the property and the discontinuance of its service.

The commission has further suspended from October 13 to April 13, 1917, tariffs providing for a proposed increase in rates on lumber in carloads from Troy, Tell City, Cannelton, Rock Hill and Rockport, Ind., to points in Central Freight Association territory located west of the Indiana-Illinois state line.

The commission has announced a hearing to be held at Washington on October 23 on the petition of the express companies for an order authorizing the maintenance of express rates dependent upon the value declared in writing by the shipper, or agreed upon in writing as the released value of the property.

The commission has suspended from October 15 until February 12, 1917, the operation of an item in supplement to the Western Classification which would have the effect of increasing from class E to class B the carload rate on digester tankage, blood meal, meat meal and blood flour between points in Western Classification territory.

The Interstate Commerce Commission has reopened proceedings on the application of the Yazoo & Mississippi Valley for permission to maintain the same rates from Memphis, Cairo and other points north thereof to Jackson, Miss., that are maintained by the direct line of the Illinois Central while publishing higher rates to intermediate points. A hearing will be held at Washington on October 21.

The commission has suspended from October 15 until February 12, 1917, certain items in tariffs filed by the Pennsylvania lines providing for the withdrawal of an export commodity rate on grain from Chicago to Newport News and Norfolk, Va., in connection with the Chesapeake & Ohio and the Norfolk & Western. The present rate is 12.2 cents per 100 lb. and the proposed domestic rate is 13.8 cents.

The Interstate Commerce Commission has reopened the case of the Charleston & Norfolk Steamship Company against the Chesapeake & Ohio and other railroads, recently dismissed on the ground that the steamship company was not a common carrier. The action carries out the request made in a resolution adopted by the Senate. The steamship company seeks proportional rates from Cincinnati, Louisville and other cities to Nor-

folk and Newport News on traffic destined to Charleston which are now applied by the railroad companies in connection with rail lines leading into the same territory.

The National Live Stock Exchange, Chicago, has filed a complaint with the commission involving all the rates, rules and regulations covering the shipment of live stock throughout Official Classification territory, asking for a restoration of the rates in effect on January 1, 1916, with a reduction of the carload minimum weights and the establishment of rates of stock cattle, sheep and hogs not in excess of 75 per cent of the rates on fat cattle, sheep and hogs.

A large number of briefs have been filed with the commission in connection with its investigation of bills of lading by railroads, shippers' organizations and a number of state commissions, in anticipation of the hearing before the commission to be held at Washington on October 20 and 21. The investigation has been in progress since May, 1912, having been reopened as a result of the Cummins amendment. One of the principal briefs on behalf of the shippers has been filed by the National Industrial Traffic League; and a brief on behalf of the carriers has been filed by committees of counsel for the Official Classification Committee, the Uniform Bill of Lading Committee, the Western Classification Committee and the Southern Classification Committee.

Wool from California

Opinion by Commissioner Hall.

A proposed tariff rule, providing that shipments of wool in grease, in bales, from California points to eastern destinations must be compressed to a density of 15 lb. per cubic foot, is found justified as to sheared wool, but not as to "pulled" wool, for which the density prescribed should not exceed 12 lb. per cubic foot.

To avoid undue preference shippers of wool in grease from Utah and Nevada should be required to compress their bales to a definite density. (41 I. C. C. 314.)

Shreveport Rate Case

New tariffs filed by the Texas railways in compliance with the orders of the Interstate Commerce Commission in the Shreveport rate case, increasing rates between points in Texas above the rates allowed by the Texas Railroad Commission, have aroused a storm of protest among the shippers of the State, and the Interstate Commerce Commission has been asked to suspend the tariffs before they become effective on November 1. Protests against the new tariffs have been filed with the commission by the attorney general of Texas, the Texas Industrial Traffic League, the Texas Cattle Raisers' Association and various other shippers' organizations, and, as a result, the commission has announced an informal hearing for Thursday, October 19, respecting any rates, rules or regulations contained in the tariffs filed which are "alleged to be in contravention of the commission's order." Several meetings of shippers have been held in Texas, conferences have been held with the attorney general, and it is reported that plans have been made to raise a fund of \$25,000 to \$30,000 to carry on the fight. It was also decided to appoint a committee representing the shippers to handle negotiations between the shipping interests, the Interstate Commerce Commission, the Texas Railroad Commission and the carriers. The new tariffs filed by the commission are based on the commission's order in the Shreveport rate case, in which it prescribed a scale of rates applicable to points in Texas to prevent discrimination against the Louisiana shippers who were dependent on the interstate rates. The shippers complain that in the new tariffs the railroads have left out rates which were reduced by the Interstate Commerce Commission and that some of the advances are greater in amount than those allowed by the commission.

PERSONNEL OF COMMISSIONS

Charles H. Hurdleston, recently appointed a member of the Texas State Railroad Commission, to fill out the remainder of the term of William D. Williams, deceased, sat with the commission for the first time on October 10.

Alfred Craven, chief engineer of the New York Public Service Commission, First district, has been appointed consulting en-

gineer. Daniel L. Turner, deputy engineer of subway construction, has been appointed acting chief engineer.

COURT NEWS

Excessive Damages

The California Supreme Court has set aside as excessive a \$10,000 verdict for the wrongful death of a farmer 78 years old, with a life expectancy of 4.8 years, and earning \$700 a year.—*Dickinson v. Southern Pacific (Cal.)*, 158 Pac., 183.

Fires from Sparks—Evidence

In an action against a railroad for fire set by sparks, the Alabama Supreme Court holds that evidence of several witnesses merely that a locomotive passing shortly before the fire about noon emitted volumes of smoke and steam, without any evidence as to sparks, justified a charge for the defendant. This was negative evidence that the engine was not emitting sparks.—*Turner v. Atlanta & St. Andrews Bay (Ala.)*, 72 So., 388.

Establishment of Special Rates

The Alabama Supreme Court holds that the statute of 1907, giving the Railroad Commission authority to permit common carriers to establish special rates for the transportation of specific commodities from specified points or within specified zones, does not authorize the commission of its own motive to establish special rates or require the continuance of a special rate, but only to approve special rates submitted by a carrier, who may withdraw them at will.—*State v. L. & N. (Ala.)*, 72 So., 494.

Failure to Stop, Look and Listen

The Alabama Supreme Court holds that the fact that a train approached a crossing over which several hundred people and vehicles passed daily, at a speed of three or four miles an hour, without actual knowledge of the approach of an automobile and without any signal, did not make the engineer guilty of wantonly and intentionally striking the automobile. Even though the railroad had been guilty of simple negligence, the failure of the chauffeur of the automobile to stop his car and look and listen before attempting to cross the main track was, as a matter of law, contributory negligence, barring recovery for damages to the car.—*Bailey v. Southern (Ala.)*, 72 So., 67.

Powers of New York Public Service Commissions

The New York State Court of Appeals in the case of the New York and Queens Gas Company appealing from an order of the Public Service Commission, directing it to extend its mains to Douglaston, decides that the courts cannot review the facts. The company declined to obey the commission's order because the extension to so sparsely settled a region would not yield more than 2½ per cent, and it began suit in the Supreme Court, Appellate Division, to have the order of the commission declared unreasonable. On March 8, 1916, the Appellate Division has unanimously reversed the decision of the commission; now the Court of Appeals has unanimously reversed the Appellate Division. In deciding against the commission the Appellate Division asserted a right to say "whether the extension ordered was a reasonable extension." The Court of Appeals holds that this assertion was erroneous because, "the court has no power to substitute its own judgment of what is reasonable in place of the determination of the Public Service Commission; it can only annul the order of the commission for the violation of some rule of law."

As to why the judgment of the commission should predominate over that of the court, the Court of Appeals points out that the commission was created to perform important functions in the community with reference to the regulation of utilities, and that the commissioners are expected to have peculiar capacity for dealing with the complex problems presented by the activities of public service corporations.

The present decision says:

"This decision (of the Appellate Division) if allowed to stand will seriously hamper the commissions in the discharge of their duties and go far toward defeating the efforts of the Legislature to establish agencies to regulate the great public service corporations."

Railway Officers

Executive, Financial, Legal and Accounting

T. D. Alden has been appointed assistant auditor of freight accounts of the Atchison, Topeka & Santa Fe, with office at Topeka, Kan.

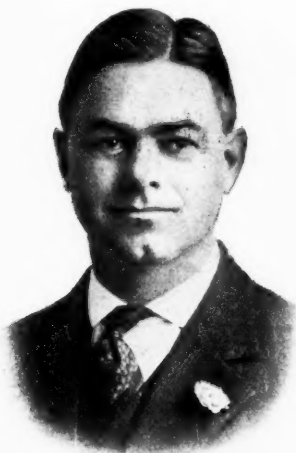
J. W. Orr, controller of the Pennsylvania Lines, has also been elected vice-president of the Lorain, Ashland & Southern, recently acquired by the Pennsylvania.

L. W. Baldwin, general manager of the Central of Georgia at Savannah, Ga., has been elected vice-president and general manager, with headquarters at Savannah.

T. D. Tilden, chief clerk in the freight auditor's office of the Atchison, Topeka & Santa Fe, at Topeka, Kans., has been appointed assistant auditor of freight accounts, with the same headquarters.

J. E. Baker, of San Francisco, Cal., chief statistician of the Southern Pacific, whose appointment as adviser to the Chinese Ministry of Communications was recently announced, has just

sailed to China to assume his new duties. The department in which he will serve has charge of all mail, telephone, telegraph and railway systems throughout the Chinese Republic. He was recommended for this post by the Interstate Commerce Commission, of which he was formerly statistician. In 1906 he was field agent for the Wisconsin Tax Commission and later became instructor of economics and transportation at George Washington University, at Washington, D. C. He was then made special agent of the United States



J. E. Baker

Census Bureau, resigning to become consulting statistician for the Brotherhood of Locomotive Firemen and Enginemen. In 1911, he was appointed assistant statistician of the Southern Pacific and later promoted to statistician. He will have his headquarters at Peking, China.

J. A. Shepherd, superintendent of terminals of the Missouri Pacific at Kansas City, Mo., has been elected president and general manager of the Trans-Mississippi Terminal Corporation, with office at New Orleans, La.

E. B. Taylor, second vice-president of the Pennsylvania Lines, has been also elected president of the Lorain, Ashland & Southern, recently taken over by the former road. He succeeds the late Joseph Ramsey, builder and owner of the road.

I. M. Hunt has been elected secretary and treasurer of the Crosbyton-South Plains, succeeding R. M. Bassett. The name of the Crosbyton-South Plains Railroad has been changed to South Plains & Sante Fe, and the general offices have been moved from Crosbyton, Tex., to Lubbock, Tex.

Roy W. Smith, assistant auditor of receipts for the Nashville, Chattanooga & St. Louis, with office at Nashville, Tenn., has been appointed auditor of receipts, succeeding Charles W. Stevenson, recently deceased. William P. Kerrigan has been appointed assistant auditor of receipts.

Frank A. Walsh, secretary, treasurer and auditor of the Lorain, Ashland & Southern, recently acquired by the Pennsylvania, has been retained as secretary and treasurer, with office at Lorain, Ohio. S. H. Church, secretary of the Pennsylvania Lines, has also been elected assistant secretary of the Lorain, Ashland & Southern.

Operating

Richard A. Jackson, vice-president and general counsel of the Great Northern, with office at St. Paul, Minn., has tendered his resignation, effective November 1, and E. C. Lindley, general solicitor of the Great Northern, with office at St. Paul, Minn., has been elected vice-president and general counsel with the same headquarters, succeeding Mr. Jackson.

Frank Eberhart, trainmaster of the Erie at Marion, Ohio, has been appointed trainmaster of the Marion division, with office at Huntington, Ind., relieving Carl Bucholtz, promoted.

John A. Streyer, traffic manager of the Macon, Dublin & Savannah, at Macon, Ga., has been appointed general manager succeeding H. B. Grimshaw, resigned to go to another company.

A. W. Woodruff, assistant superintendent of the Union Pacific at Omaha, Neb., has been made trainmaster at Ogden, Utah, succeeding A. W. McDuffie, appointed assistant superintendent at Omaha.

T. G. Jamieson, general yardmaster on the Oregon Short Line at Salt Lake City, Utah, has been appointed trainmaster of the Utah division with same headquarters, succeeding O. E. Smith, assigned to other duties.

J. A. Cook, terminal trainmaster of the Wabash at Moberly, Mo., has been appointed assistant superintendent in charge of the Detroit terminals with office at Delray, Mich., the former position having been abolished.

M. H. Cahill, who has been appointed general superintendent of the Baltimore & Ohio, with headquarters at Pittsburgh, Pa., was born on November 19, 1872, at Lexington, Richmond county,



M. H. Cahill

Ohio, and was educated in the public schools. He began railroad work in November, 1886, as a messenger on the Baltimore & Ohio. From 1887 to 1892 he served as a telegraph operator, and then to 1905 as despatcher and chief despatcher. He became division operator in 1905, remaining in that place until 1910, when he was appointed trainmaster. From January to August, 1912, he served as assistant superintendent, and then to the following November as superintendent, at which time he left the service of the Baltimore & Ohio

to become division superintendent of the Delaware, Lackawanna & Western. In May, 1913, he returned to the service of the Baltimore & Ohio as assistant superintendent of the Cumberland division at Keyser, W. Va. He subsequently served as superintendent of the New Castle division at New Castle, Pa., until January, 1915, when he was appointed superintendent of the Cumberland division, with headquarters at Cumberland, Va., which position he held at the time of his recent appointment as general superintendent of the same road, as above noted.

C. H. Priest, assistant superintendent of the Portland Terminal Company, at Portland, Ore., has been appointed superintendent, succeeding S. E. Sanborn. The office of assistant superintendent has been abolished.

E. Phenneger, agent of the Missouri Pacific, with office at Cornell, Kans., has been appointed special assistant to the superintendent of transportation of the Missouri Pacific at St. Louis, Mo., succeeding D. O. Ouellet, promoted.

W. E. Brooks, superintendent of the eastern division of the Missouri Pacific, with office at Jefferson City, Mo., has been transferred to Kansas City, Mo., as superintendent of terminals there, succeeding J. A. Shepherd, promoted; C. B. Wildman, superintendent of the Central division of the Missouri Pacific at Van Buren, Ark., has been appointed

superintendent of the Eastern division, with office at Jefferson City, Mo., succeeding W. E. Brooks, transferred, and W. C. Morse, superintendent of the Memphis division, with office at Wynne, Ark., has been transferred to Van Buren, Ark., in succession of C. B. Wildman, transferred.

E. R. Gassmann, recently resigned as assistant superintendent of the Trinity & Brazos Valley, with office at Teague, Texas, has been appointed to a position in the Department of Agriculture, at Washington, D. C., in connection with the distribution of perishable fruit and vegetables.

V. W. Lankey has been appointed trainmaster of the Mackinaw division and branches of the Michigan Central, and M. T. Wright has been appointed trainmaster of the Saginaw division and Bay City yard, both with headquarters at Bay City, Mich.; L. H. Johnston has been appointed assistant trainmaster of the North Mackinaw division and branches, with headquarters at Grayling, Mich.

R. S. Marshall, superintendent of the Virginia division of the Seaboard Air Line at Richmond, Va., has been appointed to the new position of assistant general manager; G. R. Carlton, superintendent of the Georgia division at Atlanta, Ga., has been appointed superintendent of the Virginia division, vice Mr. Marshall, and H. B. Grimshaw, general manager of the Macon, Dublin & Savannah at Macon, Ga., has been appointed superintendent of the Georgia division, vice Mr. Carlton.

The resignations of J. F. Maguire, general manager, and C. W. Kinney, superintendent of transportation, of the Lehigh Valley, have been accepted with regret, to take effect October 23. The position of general manager has been abolished, and Charles T. O'Neal, now superintendent of the Buffalo division and the lake lines, has been appointed general superintendent. In the future the general superintendent, superintendent of motive power, engineer maintenance of way and superintendent of telegraph will all report direct to F. L. Blendinger, vice-president, at New York.

Traffic

R. G. Holmes, chief of tariff bureau, Western lines of the Canadian Pacific, at Winnipeg, Can., has been appointed assistant general freight agent, Western lines, with same headquarters, W. G. Arnold being appointed chief of tariff bureau, with same headquarters.

A Commissioner for Official Classification Territory

George F. Randolph, for the past 12 years vice-president of the Baltimore & Ohio, in charge of the traffic department, has been appointed commissioner of (a) the Trunk Line Association, (b) the Central Freight Association, (c) the Central Passenger Association and (d) the New England Freight Association, with office in New York City. He will resign his position on the Baltimore & Ohio and will take up his new duties November 1. This is a new office, and Mr. Randolph's functions will have to do with a larger territory than has been assigned to a single permanent officer or committee since the dissolution of the Joint Traffic Association nearly 20 years ago. The officers at the head of the present associations, C. C. McCain, chairman of the Trunk Line Association; L. H. Kentfield, chairman of the New England Freight Association; E. Morris, chairman of the Central Freight Association, and F. C. Donald, commissioner of the Central Passenger Association, will continue as at present, and the authority of the new officer will take in the whole of the territories represented.



G. F. Randolph

These several associations, though not frequently mentioned in the newspapers, and less in the public eye than in former years, are still important organizations. Conferences between the officers of the dozens of roads interested in the traffic of each of the different territories are a constant feature of the activities of the traffic departments, and the new office will be no sinecure.

George F. Randolph was born June 29, 1856, at Norwalk, O. His first railroad service was on the Cincinnati, Sandusky & Cleveland, in 1873, where he was telegrapher and clerk. In 1875 he went to the St. Louis & San Francisco, and for four years he was paymaster on that road. In 1879 he returned to the Cincinnati, Sandusky & Cleveland. In 1881 he left the railway service and went to France for the Equitable Life Insurance Company. He was soon back in America, and was traveling auditor on the Missouri Pacific. In 1883, he was in the general superintendent's office of the Missouri, Kansas & Texas, at Sedalia, Mo. From there he went to the West Shore and for about two years he was in the general office of that road at New York City. Then for four years he was general freight and passenger agent of the Elmira, Cortland & Northern, which now is a part of the Lehigh Valley; and in January, 1890, he went to the New York & New England as general freight agent. Two years later he went to the Philadelphia & Reading, but soon returned to the New York & New England, where he was appointed general traffic manager.

Mr. Randolph first went to the Baltimore & Ohio in 1896, having been appointed, in March, that year, general traffic manager of the Baltimore & Ohio Southwestern. He represented the Baltimore & Ohio on the Board of Managers of the Joint Traffic Association from October 1, 1897, to October 4, 1899. For four years—1899 to 1903—he was the chief officer of the Baltimore & Ohio at New York City; and on January 13, 1904, was made first vice-president. When the Baltimore & Ohio acquired control of the Cincinnati, Hamilton & Dayton, he was made vice-president of that company also.

Engineering and Rolling Stock

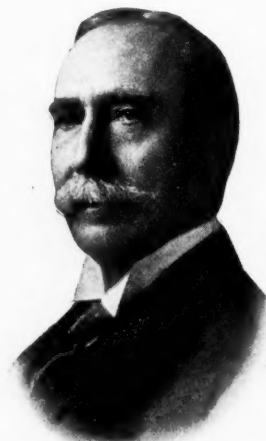
B. J. Farr has been appointed master mechanic of the Grand Trunk, western lines, with headquarters at Battle Creek, Mich., in place of W. H. Sample, transferred.

Purchasing

Harry P. Spann, has been appointed division storekeeper of the Atchison, Topeka & Santa Fe, at River Bank, Cal., succeeding G. O. Hixon, transferred to Gallup, New Mex., relieving C. M. Rouse, resigned.

OBITUARY

Virgil Gay Bogue, a well known civil engineer, and formerly, from November, 1886, to 1891, chief engineer of the Union Pacific System, died October 14 on the steamship Esperanda, on which he was returning from Mexico. He was born on July 20, 1846, at Norfolk, St. Lawrence county, New York, and was educated at the school of General William H. Russell of New Haven, Conn., and at Rensselaer Polytechnic Institute at Troy, N. Y., graduating from that institute with the degree of C. E. in 1868. One year after leaving college, he went to Peru, South America, where for some years he was engaged in railway construction. He then became manager of the Trujillo Railway in northern Peru, which position he held until active hostilities between Peru and Chile broke out, when he returned to the United States and was until November, 1886, engaged on the surveys and construction of



V. G. Bogue

the Northern Pacific across Idaho and Washington; he discovered and named Stampede Pass, and supervised the construction of the road to the Pacific Coast. From November, 1886, to 1891 he was chief engineer of the Union Pacific System, retiring in the latter year to open an office in New York as consulting engineer, which he maintained until the time of his death. He was a member of the commission appointed by President Harrison, to investigate methods for improving the navigation of the Columbia river, and afterwards was consulting engineer for the governor of New Zealand, for a period of about three years, on the route of the proposed railway across the South Island. He was also, for some time, consulting engineer of the Department of Public Works of New York, and was a member of the commission appointed by Mayor Strong of New York to determine the feasibility of operating surface cars on the Brooklyn bridge. He later served as consulting engineer of the Western Maryland, and from 1905 to 1909 as vice-president and chief engineer of the Western Pacific during the four years of its construction.

Captain C. L. Harris, who was one of the builders of the Gulf & Ship Island and for many years its general manager, died at his home in St. Louis, Mo., October 9, age 76.

Edward Sawyer, formerly secretary and treasurer of the Great Northern, died at his home in St. Paul, Minn., October 9, after an illness of little more than a week. He was 80 years old, having been born on February 8, 1836, at Dover, New Hampshire. He received his early education in the common and high schools in this community and shortly thereafter entered the employ of the Northwestern Packet Company at Dubuque, Iowa, as a cashier. A year later, in 1865, he became cashier of the Davidson Packet Line at St. Paul, Minn. In 1871 he was appointed secretary of the land department of the St. Paul and Sioux City and in May, 1879, he went to the St. Paul, Minneapolis & Manitoba as secretary and assistant treasurer, holding this position for about 10 years. In 1889 he was appointed secretary and treasurer of the Great Northern, from which office he retired on January 1, 1912. In connection with his duties on the Great Northern he was also secretary and treasurer of the Eastern Railway of Minnesota, treasurer of the Montana Central and secretary and treasurer of the Minneapolis Union, ceasing his activities with these last named companies at the time his resignation from the Great Northern became effective.

Charles W. Stevenson, auditor of receipts for the Nashville, Chattanooga & St. Louis, with office at Nashville, Tenn., died at his home in that city on Sunday, October 8, after an unsuccessful operation for stomach trouble. Mr. Stevenson was born in June, 1867, in a village near Nashville, now a part of the city proper, where he received his early education. Upon leaving school he at once entered railway service with the Nashville, Chattanooga & St. Louis as a clerk in the local freight office, since which time he has been continuously in the employ of this one company, working up through the various clerical grades until about nine years ago when he was elected auditor of receipts, with headquarters at Nashville, Tenn., the office he held at the time of his death.



C. W. Stevenson

IRON AND STEEL EXPORTS FROM GERMANY.—Export of iron and steel goods from Barmen, Germany, to the United States, which during the first six months of the year 1914 amounted to \$679,031, totalled only \$30,302 for the year ended December 31, 1915. There is an embargo on nearly all iron and steel goods.

Equipment and Supplies

LOCOMOTIVES

THE ARIZONA & NEW MEXICO is about to buy 2 locomotives.

THE UNION PACIFIC is inquiring for 2 Decapod locomotives.

THE MARSHALL & EAST TEXAS is inquiring for 3 Consolidation locomotives.

THE MINNESOTA STEEL COMPANY is in the market for one eight-wheel switching locomotive.

THE BRITISH WAR OFFICE has ordered 100 locomotives from the American Locomotive Company.

JOHN MARSCH, Chicago, Ill., has ordered 6 six-wheel switching locomotives from the Baldwin Locomotive Works.

THE COMPAGNIA ESPANA COLONISATION has given the American Locomotive Company an order for 6 locomotives.

THE FINLAND STATE RAILWAYS have placed an order with the American Locomotive Company for 20 locomotives.

THE ORLEANS RAILWAY (France) has ordered 50 Mikado locomotives from the American Locomotive Company.

THE AMERICAN ROLLING MILL COMPANY, Middletown, Ohio, is in the market for 5 six-wheel and four-wheel switching locomotives.

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA is about to purchase a number of Mikado and six-wheel switching locomotives.

THE STANDARD STEEL WORKS COMPANY, Burnham, Pa., has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE MARK MANUFACTURING COMPANY, South Chicago, Ill., has ordered one four-wheel switching locomotive and one six-wheel switching locomotive from the Baldwin Locomotive Works.

FREIGHT CARS

THE BALTIMORE & OHIO is inquiring for 1,000 freight cars.

THE ATLANTIC COAST LINE is in the market for 1,000 cars.

THE NORTHERN PACIFIC is building 500 box cars in its own shops.

THE PERE MARQUETTE has revived inquiries for 1,500 40-ton wooden box cars.

GILLESPIE BROTHERS, New York, are inquiring for 100 20-ton and 200 30-ton flat cars.

THE UTAH COPPER COMPANY has ordered 150 ore cars from the Pressed Steel Car Company.

THE MISSOURI PACIFIC has ordered 1,500 general service cars from the American Car & Foundry Company.

THE CARNEGIE STEEL COMPANY is expected to place orders shortly for 156 gondola and 119 70-ton hopper cars.

THE UNION TANK LINE has arranged for the construction of 2,250 cars, some of which will be built in company shops and some by merchant builders.

THE DULUTH, SOUTH SHORE & ATLANTIC has ordered 200 40-ton flat cars, 200 40-ton box cars, 100 50-ton hopper and 10 40-ton refrigerator cars from the Haskell & Barker Car Company.

THE CHICAGO & NORTH WESTERN has ordered 500 ore cars from the Pullman Company. It remains in the market for 1,700 50-ton composite gondola cars and 1,500 30-ton wooden box cars.

THE CHICAGO, MILWAUKEE & ST. PAUL is enquiring for specialties for 1,000 box cars to be built in its shops after a present lot of 1,000 cars, reported in the *Railway Age Gazette* of September 15, is completed.

THE LOUISVILLE & NASHVILLE has ordered 1,000 gondola and 500 hopper cars from the Pressed Steel Car Company and will soon place orders for 750 underframes for box cars and 750 underframes for gondola cars.

THE CHESAPEAKE & OHIO, reported in the *Railway Age Gazette* of October 6 as inquiring for 1,000 50-ton hopper cars, has ordered 1,000 50-ton hopper cars from the Standard Steel Car Company, 500 from the Pressed Steel Car Company and 500 from the Ralston Steel Car Company. These orders are in addition to 1,000 70-ton hopper cars ordered from the Pressed Steel Car Company and reported in the *Railway Age Gazette* of September 29.

PASSENGER CARS

THE GREAT NORTHERN has ordered 15 postal cars from the Pressed Steel Car Company.

THE CHESAPEAKE & OHIO has ordered 10 coaches, 1 dining and 2 parlor cars from the Pullman Company.

THE LOUISVILLE & NASHVILLE has ordered 6 coaches, 4 horse and baggage cars and 4 baggage and mail cars from the American Car & Foundry Company.

THE LONG ISLAND'S order for passenger cars placed with the Pressed Steel Car Company, as noted in last week's issue, included 15 P54 B coaches and 45 P54 trailer cars.

IRON AND STEEL

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 5,000 tons of rails from the Lackawanna Steel Company for 1917 delivery.

THE PULLMAN COMPANY has ordered 1,284 tons of steel from the Kenwood Bridge Company for a machine shop and section of a yard crane runway.

THE CHICAGO & NORTH WESTERN has ordered 1,076 tons of steel for ore spouts for No. 3 dock at Ashland, Wis., from the American Bridge Company.

THE BALTIMORE & OHIO has ordered 700 tons of bridge steel from the Fort Bridge Steel Works, 100 tons from the Toledo-Massillon Bridge Company and 550 tons from other shops.

MISCELLANEOUS

THE GREAT NORTHERN is in the market for 3 65,000-gal. steel tanks with 30 ft. steel towers, 1 28,500-gal. steel tank with a 13 ft. steel tower and 2 10,000-gal. steel tanks.

SIGNALING

THE ALABAMA & VICKSBURG is to install automatic block signals on 23 miles of its line; 28 style "S" double-case upper-quadrant three-position signals. Keystone insulated rail joints will be used. The apparatus is to be furnished by the Union Switch & Signal Company and installed by the railroad company's forces.

THE SOLVAY PROCESS COMPANY has awarded the Union Switch & Signal Company a contract for installing an interlocking plant at the crossing of its track with the Detroit, Monroe & Toledo Short Line, at Sibley, Mich. The machine will be a Stevens with six working levers and two spare spaces. All signals will be equipped for electric lighting.

THE QUEEN & CRESCENT has ordered from the Union Switch & Signal Co. the materials for automatic signals between Science Hill and U. S. Junction, requiring twenty-eight "T-2" top post signals. The relays for controlling these signals will be two element model 12 U. S. & S. Co. polyphase type having 110 volt local and 0.2 volt track winding. The work of installing will be done by the railroad company's men.

THE LOUISVILLE & NASHVILLE is to install an electro-mechanical interlocking plant at Christiansburg, Ky., the junction of the Lexington branch and Shelby cut-off. The mechanical section will consist of a 24-lever Saxby & Farmer frame with 14 working levers. The electro section will be a style "S-7" machine with four operating levers and three spare spaces. The material will be supplied by the Union Switch & Signal Co.

Supply Trade News

The American Car & Foundry Company has received an order from the Navy Department of the United States for 300,000 3-in. shells valued at about \$945,000.

Henry Splittorf, one of the "grand old men" of telegraphy and the inventor of many important electrical devices, died at his home in New York on October 16, aged 82 years.

The Harrison Railway Specialties Company has recently closed an order for 2,000 rotary ring steel dust guards for the Western Maryland, and an order for 500 wooden dust guards from the New York, Chicago & St. Louis.

Marvin A. Neeland, assistant to vice-president, and chief engineer of the United States Steel Corporation, has resigned to accept the position of consulting engineer of the American International Corporation, with headquarters at 120 Broadway, New York. John Hulst, chief engineer of the Carnegie Steel Company, has been appointed to succeed him.

H. W. Finnell, general manager of the Henry Giessel Company, Chicago, has been elected vice-president of Templeton, Kenly & Co., Ltd., Chicago, manufacturers of Simplex jacks. He will be in charge of sales and assumed his new position on October 1.

Mr. Finnell started his business career in the rolling mills of the National Tube Company at McKeesport, Pa., in 1899. He worked his way into the sales department, but left the company in 1901 to enter the service of the Wheeling Steel & Iron Company. In 1904 he left the position of assistant sales manager of that company and tried his luck in the oil business in Indian Territory but without success. In 1906 he joined the sales department of the Chicago Railway Equipment Company, but in 1909 he became assistant sales manager of the Carbon Steel Company, later being sales manager and then assistant to the president and at the same time president of the Mosher Water Tube Boiler Company. Prior to October 1, he was general manager of the Henry Giessel Company, Chicago. He still retains his interest in that company.



H. W. Finnell

The committee composed of Gates W. McGarrah, Otis H. Cutler and Robert J. Davidson has issued a notice to holders of certificates of deposit issued by the Bankers Trust Company of New York for the preferred and common stock of the American Brake Shoe & Foundry Company, announcing that the plan providing for the organization of a new corporation under the laws of Delaware of the same name as the New Jersey corporation has been declared operative.

George L. Lord, who was for many years manager of the railroad and steamship departments of the West Disinfecting Company, New York, died at his home in New York, on August 17. Mr. Lord had a genial temperament and business aptitude that made for him a host of friends in all parts of the country. Although in his seventieth year few of his friends supposed he was more than of middle age, and while he had felt the enervating effect of the heat during August no illness preceded his death, the end coming suddenly.

The Willard Storage Battery Company, Cleveland, Ohio, announces the following appointments: Lester B. Knight, eastern

representative, railway department, with headquarters at New York; E. L. Myers, western representative of railway department, with headquarters at Chicago, with jurisdiction over all territory west of the Ohio and Mississippi rivers, and I. R. Wentworth, representative of railway department at Chicago. Mr. Knight was prior to September, 1915, chief electrician of electric car lighting on the Boston & Albany. Mr. Myers has been in the service of the Willard Storage Battery Company since December 1, 1913. From 1909 to 1913 he was chief electrician of the National Railways of Mexico.

J. P. Landreth, formerly Chicago manager of the Garlock Packing Company, Palmyra, N. Y., has been appointed western sales manager of the Anchor Packing Company, Philadelphia, Pa., with headquarters at Chicago. Mr. Landreth was born at Beloit, Kan., on August 11, 1883, and attended the public schools and a business college at Joplin, Mo., and the Missouri Military Academy at Mexico, Mo. His first business connection was with the Joplin (Mo.) Water Works Company as collector and inspector of accounts. Later he was employed as car clerk on the Denver & Rio Grande, at Salida, Colo., and in 1902 took a position with the English Iron Works, at Kansas City, Mo., where he gained a knowledge of steam railway specialties which qualified him for a sales position in this line in St. Louis. In the spring of 1904, he became associated with the Garlock Packing Company as traveling salesman and on January 1, 1905, was transferred to St. Louis, Mo., as city salesman. In the fall of 1906, he took charge of the Kansas City office of the same company, and in May, 1908, he was made Chicago manager, which position he held until July, 1916.

Harry A. Pike has recently been appointed assistant to the president of the Call Switch Company, Inc., New York. Mr. Pike graduated from the common schools and began his railroad work in 1880 as general storekeeper of the Lake Erie & Western, at Lima, Ohio, now a part of the New York Central Railroad. In 1883 he was appointed chief clerk in the motive power department of the Chicago & Atlantic Railroad, now the Chicago division of the Erie. In 1885 he was made a representative of the American Brake Company, at St. Louis, and three years later went to the U. S. Metallic Packing Company in the same capacity, with offices in Chicago. In 1893 he was appointed representative of the Chicago Pneumatic Tool Company, and in 1904 was made eastern sales agent of the Flannery Bolt Company, with offices in New York City. Soon after leaving this company in 1912 he was made secretary of the Clifton Porcelain Tile Company, Inc., Newark, N. J., manufacturers of fireproof floor and wall tile. Mr. Pike retains this position in addition to his work with the Call Switch Company. The executive offices of the Call Switch Company, Inc., which have been located at Denver, Colo., for a number

of years, will hereafter be located in the Singer building, 149 Broadway, New York.

G. A. White, formerly metallurgist of the American Sheet & Tin Plate Company, has become associated with the Titanium Alloy Manufacturing Company, Niagara Falls, N. Y., in the same capacity. Mr. White's long experience in the manufacture of sheet steels makes him a valuable addition to the metallurgical force of the Titanium company. Prior to his connection with the American Sheet & Tin Plate Company, Mr. White was for a considerable time with the Rock Island and also with the Eastern Steel Company, Pottsville, Pa., where he was engaged in the manufacture of structural material. It is, however, in the manufacture and treatment of sheet steel that Mr. White has done his most notable work.

According to E. J. Buffington and G. G. Thorpe, presidents respectively of the Illinois Steel Company and the Indiana Steel Company, five additional blast furnaces are to be erected at the Gary, Ind., plant. This will make 17 stacks in all, the largest single group in America. New construction now under way at the plant will cost between \$15,000,000 and \$20,000,000, and employment will be given to several thousand men on its completion next year. The National Tube Company plans call for four blast furnaces, several ore docks, a Bessemer mill and auxiliary facilities. Plans are also under way for the American Locomotive Company's new plant, and for that of the American Car & Foundry Company, both of which are to be located at Gary.

Edward Wray, business manager of the Railway Electrical Engineer, has resigned to accept the position of assistant to R. C. Lanphier, general manager of the Sangamo Electric Company, with headquarters at Springfield, Ill. Mr. Wray was born in Janesville, Wis., in 1884 and was graduated from the University of Wisconsin in 1905 from the course in electro-chemistry. After finishing the regular four-year course, he took another year of post graduate work and received the degree of electrical engineer. During the year of post graduate work he had charge of a series of tests on railway car lighting equipment which was participated in by ten senior students of the university. The report of this investigation was published by the university as one of its official bulletins under the title of "Methods of Train Lighting." After leaving school Mr. Wray went with J. G. White & Company, of New York, where he spent the first six months on inspection and design of electric power plants. He was then sent to Porto Rico in connection with the Caguas Railway extension, where he remained until April, 1908. During this time he held the position of rodman, levelman, transitman, topographer and assistant engineer. Upon returning to New York he entered the employ of D. C. & William D. Jackson, engineers, of Boston, and was engaged in the work of appraising the New England Telephone Companies' properties until November, 1908. He then returned home and until May, 1909, was engaged as assistant manager of the Janesville (Wis.) Electric Company. About this time, he got in touch with L. B. McKenzie, who was then publisher of The Signal Engineer. Mr. McKenzie explained to Mr. Wray that the Association of Railway Electrical Engineers had requested him to start a new magazine devoted exclusively to the interests of electricity on railroads, and Mr. Wray was offered the editorship on the new paper, which he immediately accepted. That was the beginning of the Railway Electrical Engineer. One year later when The Signal Engineer was purchased by the Simmons-Boardman Publishing Company, publishers of the *Railway Age Gazette*, Mr. Wray organized the Wray Publishing Company and purchased the Railway Electrical Engineer from the McKenzie Publishing Company. The Railway



J. P. Landreth



E. Wray



H. A. Pike

Electrical Engineer was again sold to the Simmons-Boardman Publishing Company in October, 1915, and was moved to New York, Mr. Wray coming with it as business manager.

Oliver J. Smith, whose appointment as manager of the Lima Locomotive Corporation has just been announced, was born January 20, 1883, at South Dayton, N. Y. After an elementary education in the public schools of his native town he entered the high school at Jamestown, N. Y. In July, 1899, he took employment with the American Locomotive Company as an apprentice, remaining with this company until 1906 when he went to the Lake Shore & Michigan Southern shops at Collinwood, Ohio, as an expert machinist. In 1907 he returned to the American Locomotive Company's plant at Dunkirk, N. Y. In 1910 he was promoted and transferred to the New York office of this same company as piece work supervisor, which position he held until August 1 of this present year, when his appointment as manager of the Lima Locomotive Corporation became effective.

J. E. Buker, general sales manager of the Chicago Car Heating Company, Chicago, Ill., has been elected vice-president, effective October 15. He was born in Jefferson County, New York, where he received his early education. Upon leaving school, he entered the mechanical department of the Michigan Central, where he remained about twelve years. Seeing a chance to acquire some very special mechanical experience with another company he obtained employment with the Atchison, Topeka & Santa Fe. Two years later he accepted a position with the Hicks Stock Car Company, as general manager, with which concern he was connected nine years. He then became assistant superintendent of machinery of the Illinois Central, holding this position for eleven years. Following his resignation from this company in 1910, he became associated with the Chicago Car Heating Company.

William W. Weller has become associated with the Vulcan Steel Products Company, 120 Broadway, New York, and now is acting as its representative in France. Mr. Weller has had an experience of 15 years in the steel industry and served for several years of that time as sales manager for a large pipe manufacturer. Others who have become affiliated with the Vulcan Company include: F. G. Belsito, who has had considerable selling experience in Cuba, Panama and Italy and who has been made the company's representative in Italy; George W. Blen, now on a business mission to England, who previously had served in the operating department of the Carnegie Steel Company and other companies; Fred M. Cole, formerly of the manufacturing department of the Cambria Steel Company, who has been placed in charge of the purchasing department; Warren M. Maule, formerly assistant in the comptroller's office of the Cambria Steel Company, who has been made secretary and head of the accounting department, and H. D. Mills, formerly head of the foreign shipping division of the American Express Company and previous to that time with various railroads, who has been placed at the head of the traffic department.

The Colorado Fuel and Iron Company

The following extracts are from the annual report of President J. F. Welborn to the stockholders of the Colorado Fuel & Iron Company:

"Gross earnings from operation were \$25,626,605, an increase of \$9,048,566, or 54.7 per cent over the previous year. Operating expenses were \$21,280,520, an increase of \$6,467,538, or 43.7 per cent. The net earnings from operation were \$4,346,086, an increase of \$2,581,027. Income from sources other than operation amounted to \$624,991, making the total net income \$4,971,076, compared with \$2,261,101 in the previous year. After deducting bond interest, taxes, sinking funds, equipment renewal fund, and cost of personal injuries under the workmen's compensation law, all amounting to \$2,769,906, there remained a surplus of \$2,201,171, as compared with a deficit for the preceding year of \$334,661. A dividend of 30 per cent, amounting to \$600,000, was declared on the preferred stock, being one-half of the deferred dividends on that stock, leaving \$1,601,171 carried to the credit of profit and loss.

"The improvement in the business and earnings has made possible a program of new construction and additions to equipment, essential to the most profitable operation of the business. A by-product coke plant of 120 ovens is to be built at the Minnequa Steel Works and other additions and improvements

at various points have been authorized during the year. The estimated cost of these authorizations, all of which are chargeable to capital account, is \$3,300,000. The total amount expended on all authorized improvements at June 30, 1916, was \$3,220,000. It is estimated that about 75 per cent of this amount, which will be taken from accumulated earnings, will be expended during the current fiscal year.

"Heavy rails represent more than 50 per cent of the output of our steel plant and as wage advances added materially to their cost, with no increase in the selling price, the average earnings per ton on all steel sold were not such as might have been anticipated in view of the high prices prevailing for certain steel products. In normal times our steel plant is dependent primarily upon railroad business and it is the view of the management that, as has been our practice, every effort should be made to take care of the requirements of our regular railroad customers during the period of abnormal demand in other lines, rather than force our railroad friends to reduce their purchases with us in order that we might take a greater amount of other business.

"On February 1, 1916, an increase of approximately 10 per cent was made in wages of our steel plant and iron mine workers. At the rate of subsequent operations this amounted to from \$40,000 to \$45,000 per month. On May 1 another increase, also approximating 10 per cent and amounting to from \$45,000 to \$50,000 per month, was made to the same class of employees. The first increase effective for five months and the second for two months, of the fiscal year, amounted in the aggregate to over \$300,000. On September 1, 1916, an increase of about 5 per cent was made in the wages of coal mine employees. At the present operating rate these various wage advances involve an annual increase in the payroll of about \$1,250,000."

The balance sheet follows:

ASSETS		June 30, 1916.
Property		\$62,801,090
Cash on hand		4,237,278
Stocks and bonds (inter company)		15,445,170
Accounts and bills receivable		4,162,139
Subsidiary companies		203,135
Cash in hands of trustees		4,425
Reserve fund—taxes		98,341
Manufactured stocks and supplies		3,761,528
Dividends and interest—accrued		131,233
Royalties on leased lands paid in advance		64,938
Total		\$90,909,277
LIABILITIES		
Common stock		\$34,235,500
Preferred stock		2,000,000
Funded debt		45,005,000
Accounts and bills payable		1,028,011
Hospital		19,557
Accrued bond interest—not due		826,995
Fund for payment of taxes		100,000
Unpaid dividend—preferred stock		600,000
Sinking fund—real estate		1,841,038
Miscellaneous funds		331,049
Profit and loss		4,922,127
Total		\$90,909,277

TRADE PUBLICATIONS

OIL ENGINES.—Bulletin No. 154 recently issued by the De La Vergne Machine Company, New York, describes the De La Vergne type "FH" crude oil engine.

PORTABLE TOOLS.—Bulletin E-44, recently issued by the Chicago Pneumatic Tool Company, describes the Duntley electric sensitive drilling stand and electric drills to fit sensitive drilling stands.

AIR COMPRESSORS.—Bulletin 34-Z, recently issued by the Chicago Pneumatic Tool Company, deals with the company's steam driven single compressors with balanced steam valve and automatic flywheel governor.

STEEL POLES.—The Bates Expanded Steel Truss Company, Chicago, has issued a 48-page pamphlet describing the one-piece steel poles manufactured by that company. An exposition is given of the method by which these poles are formed by shearing and expanding special steel I-sections which are rolled to five different sizes. The book also gives complete data on the properties of these poles and the methods by which they are installed and the various fittings used with them, such as cross-arms, lamp and trolley wire brackets, caps, etc. Several pages are devoted to handbook data particularly applicable to this product.

Railway Construction

CHESAPEAKE & OHIO.—A contract has been given to Ballard, Herring & Severs, Inc., Yancy Mills, Va., to build a line from Man, W. Va., south along Guyan river to Gilbert, 13 miles. The maximum grade will be .5 per cent against east or empty traffic, with no adverse grade against westward or loaded traffic; the maximum curvature will be 12 deg. The work will be difficult, and involves handling about 36,000 cu. yd. to the mile. There will be one deck plate girder bridge. The company expects to develop a traffic in coal and timber on the new line.

The report of the Chesapeake & Ohio for the year ended June 30, 1916, shows that the construction of the Chesapeake & Ohio Northern is rapidly nearing completion, and the line will probably be placed in operation in time to handle coal shipments to the Great Lakes at the opening of navigation in the spring of 1917. This line extends from Limeville, Ky., on the C. & O. main line to the Norfolk & Western, near Waverly, Ohio, 30.4 miles. A spur track, 4.7 miles long, from the main line at Penniman Junction east of Williamsburg, Va., to the plant of the E. I. du Pont de Nemours Company, at Penniman, has been completed. During the year the following extensions were completed; Gauley & Rich Creek branch, 0.1 mile; Dingess Run branch of the Guyandot Valley line, 0.8 mile; Horse Creek branch, 5.1 miles; Peter Cave Fork branch, 2 miles, and Beech Creek extension of the Coal River line, 1.6 miles. There was also completed 3.4 miles of second track between Balcony Falls, Va., and Greenlee.

CHESAPEAKE & OHIO NORTHERN.—See Chesapeake & Ohio.

DEEP CREEK RAILROAD.—Incorporated in Utah with \$450,000 capital, to build from Wendover, Utah, on the Western Pacific, to Gold Hill, 43 miles. A contract is reported let to the Utah Construction Company to build the line. Duncan MacVichie, president; T. J. Wyche, vice-president, and Edwin T. Jones, secretary.

DOVER, MILLERSBURG & WESTERN (ELECTRIC).—This company is planning the construction of about 35 miles of single track from Canal Dover, Ohio, to Millersburg, Ohio. While contracts for this undertaking have not yet been awarded it is expected that actual construction will begin at once. There will be four small bridges; the maximum grade is about three per cent and the maximum curvature 10 deg. Plans for a power house and several small substations along the right of way have been made. D. F. A. Wheelock, Woodward building, Warren, Pa., is the engineer in charge.

FAIRMONT HELEN'S RUN RAILWAY.—See Western Maryland.

KANSAS CITY, KAW VALLEY & WESTERN (ELECTRIC).—This company plans an extension of its line from Lawrence, Kans., to Topeka, Kans. It has not yet been definitely decided whether the extension will parallel the Union Pacific on the north side of the Kansas river or the Atchison, Topeka & Santa Fe on the south side of the river. O. K. Williamson, chief engineer, Bonner Springs, Kans.

KNOXVILLE, SEVIERVILLE & EASTERN.—Construction work is to be started at once, it is said, on a 26-mile extension of this road in Sevier county, Tenn. (See Pigeon River Railroad, August 25, page 349.)

LEHIGH & NEW ENGLAND.—According to press reports this company is planning to build an extension southwest to Pottsville, Pa.

NIAGARA & EASTERN.—The New York Public Service Commission, Second district, refused a grant permission to this company to construct the proposed line to connect the Buffalo, Lockport & Rochester with the Niagara frontier, at a point where it is proposed to build a new international bridge. It is understood that an application for permission to build part of the line to connect the Buffalo, Lockport & Rochester with the International & Erie at Hinman would be granted.

NORTHERN PACIFIC.—This company contemplates building a line from Laurel, Mont., extending west into the Lake Basin

district, a distance of about 35 miles. Bids will not be called for until about November 1.

OREGON TRUNK.—Farmers in the neighborhood of Prineville, Ore., have subscribed sufficient funds to construct a new line from that point to connect with the Oregon Trunk, a distance of about 21 miles. Except that the undertaking itself is a certainty no definite plans as to time of construction or type of motive power has yet been adopted.

PHILADELPHIA, BALTIMORE & WASHINGTON.—Work is now under way on the Delaware division double-tracking the sections from Greenwood, Del., to Harrington, 7.44 miles; Greenwood to Bridgeville, 6.05 miles, and Seaford to Broad Creek, 3.34 miles.

PHILADELPHIA ROADS.—The department of city transit of Philadelphia, Pa., announces that in order to allow ample time for preparation of proposals for Contract No. 102, Broad Street subway, City Hall station (north section), the opening of bids on this contract has been postponed from November 2, to December 7. (October 13, p. 667.)

SOUTHERN RAILWAY.—The report of this company for the year ended June 30, 1916, shows that the double track construction work on the main line north of Charlotte, N. C., together with improved alinement and the elimination of heavy grades, was completed during the year on 75 miles of the 115 miles of main line between Washington and Charlotte. Work of the remaining 40 miles is rapidly nearing completion, and it is expected that the entire main line north of Charlotte will be in operation as double track line on revised grades early in 1917. On the line between Charlotte and Atlanta double track work is nearing completion on the 56 miles between Spartanburg, S. C., and Central, and on the 23 miles between Cornelia, Ga., and New Holland. Work is also progressing on the 50 miles between Central and Cornelia, and on the existing single track gauntlet of 5.5 miles between Suwanee, Ga., and Duluth. At the close of the year there was 491.42 miles of double track in operation, and 60.84 additional miles completed, but not in actual operation.

TEXAS ROADS.—R. H. Phillips and C. E. Honon, St. Louis, Mo., and C. R. Wild, Cincinnati, Ohio, are promoting the construction of a railroad between Eagle Pass, Tex., and Rockport, on the Gulf coast, a distance of about three hundred miles. The promoters recently made a trip over the proposed route and inaugurated the work of securing the right of way. Large bonuses of money and lands are also being raised along the route in aid of the project. The promoters have obtained an option to purchase the Asherton & Gulf which runs between Asherton and Artesia Wells, 32 miles, and it will be used as a part of the through line.

VIRGINIAN RAILWAY.—This company is building a coal branch, to be known as the Piney Creek branch, from Pemberton, W. Va., south to Fireco about 7.4 miles; about 4 miles of track has already been laid, and the company expects to have the work completed by January 1, 1917. The company is also building a branch to be known as the Stone Coal Branch from Stone Coal Junction, northeast to the Lillybrook Coal Company's lands on Stone Coal creek, 8.7 miles, on which track has been laid on 6.3 miles. A spur line has been graded from the latter branch to the East Gulf Coal Company's land up Riffes branch, and another to the Mead-Tolliver Coal Company's operation on Farley branch, 1.53 miles.

WESTERN MARYLAND.—Work has been completed on the Fairmont Helen's Run Railway, from a connection with the Baltimore & Ohio, at Chiefton, Marion county, W. Va., in a generally northern direction, crossing West Fork river, thence up Helen's Run to Ida May mine, with a spur line up Martin's Run to Carolina mine, in all about 9.75 miles. The work included building two steel bridges and two timber trestles, also a four-stall enginehouse, turntable, ashpit and coaling station.

RAILWAY STRUCTURES

ATTALLA, ALA.—The Alabama Railroad Commission has issued an order, it is said, to the four railroads entering Attalla to build a union passenger station.

BALTIMORE, MD.—The Western Maryland has given a contract to the Price Concrete Construction Co., Baltimore, Md., for

building an office building on Pt. Covington street, Baltimore. The proposed structure will be two stories high, 40 ft. wide and 76 ft. long, of brick construction with slag roof, and will cost about \$12,500.

GRAND RAPIDS, MICH.—Plans for a terminal station here for the Michigan Railway are under way. It is proposed to erect a seven-story modern combination office and station building. H. D. Sanderson, chief engineer, Jackson, Mich.

HOLSOPPLE, PA.—The Baltimore & Ohio is building with its own forces a B. & O. standard combination freight and passenger station at Holsopple.

LIMA, OHIO.—The Lake Erie & Western contemplates increasing the size of its yard here as well as constructing a new round-house and some shop buildings. As yet, however, no definite plans have been formulated nor any estimates called for. J. J. Connor, chief engineer, Indianapolis, Ind.

LINEVILLE, ALA.—The Atlanta, Birmingham & Atlantic will build a new station, it is said, at Lineville.

LOCKPORT, N. Y.—The New York Central will carry out improvements, including a new freight house and yard at Lockport, to be located at a point about one mile west of the present freight house. The new freight house will be 40 ft. wide and 400 ft. long and at the east end of the freight house there will be a two-story office building, 40 ft. wide and 60 ft. long. It will have concrete foundation, brick walls, wood roof and built-up roofing. The contract has been let to Manion Brothers.

MORRISVILLE, PA.—The Pennsylvania Railroad will enlarge its yard at Morrisville. The cost of the improvements will be \$650,000.

WATERVILLE, MAINE.—The report of the Maine Central for the year ended June 30, 1916, shows that an addition was made during the year to the locomotive repair shops at Waterville, also a new, modern locomotive coaling plant, including machinery, chutes and service tracks, was constructed. At Portland, Maine, an extension to the general office building was constructed consisting of a three-story brick building, with three connections to the original building. At the Sheepscot river bridge a change in alignment with grade revision was made on each side and across Sheepscot river east of Wiscasset, and a new through riveted, steel bridge, Scherzer rolling lift draw-bridge, is now being built across the river in a new location. In order to avoid the rebuilding of the Waterville bridge at its present location across the Kennebec river, the construction of a connecting link has been authorized between Fairfield and West Benton, including a new double track steel deck bridge across the Kennebec river, and the construction of a second track, including grade revision between Waterville shops and Clinton. On the completion of these improvements, the present bridge over the Kennebec river, above Waterville, and the railroad between Waterville shops and West Benton, will be abandoned. Arrangements have been made for the construction of a modern brick passenger station at Bates street, Lewiston, Maine, to replace the structure destroyed by fire. The yard tracks at Lewiston Upper Station will also be rearranged in order to increase the facilities, and it is expected that these improvements will be completed and in use early in 1917. Work is now under way to abolish a highway grade crossing at Bath, Maine, by the construction of a railroad bridge and abutments, and the relocation of the highway, so that it will pass under the railroad. The cost of this work will be divided as follows: Maine Central 65 per cent, State of Maine 25 per cent, and City of Bath 10 per cent. Work is now underway to abolish two highway grade crossings, one west of and one east of Guildhall station, Vt., by relocating the highways and building one underpass to serve both highways. The railroad is to pay 67 per cent of the cost, the state of Vermont 25 per cent, and the Town of Guildhall 8 per cent.

PHILIPPINE RAILWAY COMPANY REPORT.—The report of the operation of the Philippine Railway Company's lines in the Philippine Islands for the year ended December 31, 1915, shows a total revenue of \$362,407 as against \$361,219 in 1914. Total expenses for 1915 were \$243,035, against \$232,795 in the previous year. The net operating revenue was \$119,372, as compared with \$128,424 in 1914, a decrease of 7.05 per cent. for 1915.

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC.—James Speyer, Seward Prosser and James Alexander, all of New York, and S. Davies Warfield, of Baltimore, have been elected to fill the four vacancies of the Chicago, Rock Island & Pacific directorate.

One of the men actively interested in the reorganization plans of the Chicago, Rock Island & Pacific is quoted in the Wall Street Journal as follows:

"The Peabody Committee has filed a foreclosure bill and no answer has been filed to date. There are some things to be said in favor of a foreclosure provided it can be accomplished without protest. There is every reason to expect concerted protest, however. The Peabody committee did not get a large proportion of the refunding bonds when it called for deposits and that is a weak point in this committee's argument.

"Of principal importance, however, is the fact that the present and prospective earnings of the Rock Island system do not warrant a foreclosure. A foreclosure case would have no more weight in court than foreclosure of the International Mercantile Marine Company would have had. The Peabody committee saw the trend of events and suggested that it might be willing to recede from its stand under certain conditions. These conditions involve the rate of assessment and this matter has not been settled. Some believe that \$30,000,000 will suffice for the present and others want \$40,000,000 and even \$50,000,000.

"It is premature to say that everything has been settled amicably, but there is every indication that harmony will result."

GREAT NORTHERN.—F. E. Weyerhauser, son of the late Frederick Weyerhauser, has been elected a director of the Great Northern, succeeding the late James J. Hill.

MISSOURI PACIFIC.—The Kansas & Colorado Pacific first refunding 6 per cent bondholders' committee, of which R. Fulton Cutting is chairman, has approved of the modified plan of reorganization by which bondholders may either exchange their bonds for an equal amount of 5 per cent preferred stock or for new general mortgage 4 per cent bonds, with a cash adjustment to cover interest from August 1, 1915, to August 1, 1916, and until the new general mortgage bonds are issued and begin to draw interest.

NEW YORK, NEW HAVEN & HARTFORD.—On the application of the directors of the estate of the late J. P. Morgan in the suit brought by Edwin Adams in behalf of certain minority stockholders for an accounting and restitution of money claimed to have been misspent or misapplied by the directors of the New York, New Haven & Hartford, the time for answering the suit has been extended to November 1, 1916.

NEW YORK CENTRAL.—It is understood that the directors are considering the possibility of offering to stockholders for subscription at par \$25,000,000 new stock. The company has available about \$50,000,000 of authorized but unissued stock. New York Central stock was selling on the New York Stock Exchange this week at about 109.

PERE MARQUETTE.—The balance of the defaulted equipment notes, which, with interest, amount to \$321,338, are being paid by the receivers, and current maturities, amounting with interest for the year to \$585,200, are being paid as they mature. The floating debt for materials and supplies has now been paid in full and there now remains to be taken care of \$5,015,000 receiver's certificates.

ST. LOUIS & SAN FRANCISCO.—The Kansas railway commission has given its approval to the proposed reorganization plan of the St. Louis & San Francisco.

STRIKE ON PARAGUAYAN RAILWAYS.—The Paraguayan Railways have suspended operations because of serious strike disorders. Strikers and their sympathizers attacked a number of trains and burned several bridges.

ANNUAL REPORTS

SOUTHERN RAILWAY COMPANY—TWENTY-SECOND ANNUAL REPORT

RICHMOND, VA., October 10, 1916.

To the

Stockholders of Southern Railway Company:

The Board of Directors submits the following report of the affairs of the Company for the year ended June 30, 1916:

The industrial characteristics of the year in the South have been revival and expansion. The march of progress, which was interrupted at the outbreak of the European war by the depression in the price of cotton, the South's chief staple, has been resumed. This fact is reflected in the revenues of Southern Railway Company. During the months of July, August and September, 1915, those revenues continued to be on the footing of the conditions which obtained during the previous year, but beginning with October they swelled progressively until they reached a volume greater than at any similar period in the history of the Company. The result was that for the entire year the revenues amounted to \$69,997,675.24, or only slightly less than in the year ended June 30, 1914, which still marks the high record on that side of the annual account. On the other side of the account this year there are reflected the lessons of experience learned during the previous year of depression. Expenses were so controlled that in the aggregate they were actually less than in the previous year, to the great advantage of the income over all charges, which grew to \$9,245,703.58, or \$2,215,738.89 more than in 1913, the last previous record in that respect. While this is a gratifying achievement, it must be noted also that the net operating income (\$21,004,005.09), which is the basis of the results secured this year, is the equivalent of a return of only 5.31 per cent. on the investment (\$395,722,785.06) in the railroad and equipment which produced it. It may perhaps be said that there is no industry except a railroad in which so large a capital is risked for such a return in its most successful year.

These results, and the financial condition of the Company at the close of the year, appear in detail in the Income Statement and the General Balance Sheet, as well as in the other tables which are part of this report.

OPERATING CONDITIONS.

There was a marked increase in efficiency in all the physical operations. With an increase of revenues of 12.54 per cent., and an increase of revenue ton miles of 20.16 per cent., showing the larger volume of business done this year as compared with last, revenue train miles decreased 1.89 per cent., and transportation expenses decreased .03 per cent. Transportation costs per dollar of revenue were 32.50 cents, or 11.18 per cent. less than in 1915, and 10.57 per cent. less than in 1914. This was accomplished in various ways, but "not without dust and heat." Great attention was given to increased loading of trains, and the average loading attained was 441.66 tons as compared with 382.33 tons in 1915, 339.21 tons in 1914 and 228.24 tons in 1908. In considering these figures the map of the Southern, and the characteristics of its traffic, should not be forgotten. The relatively large proportion of branch line mileage operated, on which an arbitrary service must be maintained, and the amount of high class merchandise and perishables carried, are constant limitations of average tonnage. This point may be illustrated by the following comparative statement of the operating results of the several main lines which constitute the back-bone of the system:

	AVERAGE MILES OPER- ATED.	PER MILE OF ROAD.				PER TRAIN MILE.		TRANS- PORTATION COSTS PER \$1.00 REVENUE.	OPER- ATING COSTS PER \$1.00 REVENUE.
		Gross Revenue.	Operating Income.	Freight Revenue.	Revenue Tons.	Freight Revenue.	Total Tons.		
System—This Year	7,022.92	\$9,967	\$2,991	\$6,695	719,571	\$3.30	442	32.50c	69.99c
Main Lines	2,272.61	18,880	7,666	12,542	1,407,910	3.46	500	27.53c	59.40c
Washington-Atlanta	662.78	25,896	11,049	15,524	1,633,675	3.52	461	26.95c	57.33c
Atlanta-Birmingham	170.69	12,207	2,004	7,268	918,308	2.55	482	40.70c	83.58c
Greensboro-Pinners Point	270.19	13,195	7,209	10,931	1,147,981	4.24	476	18.91c	45.37c
Bristol-Chattanooga	246.13	22,005	9,720	14,679	1,758,588	3.77	560	24.77c	55.83c
Morristown-Asheville	88.37	26,630	13,102	22,613	2,556,552	3.67	709	20.95c	50.80c
Asheville-Salisbury	143.00	18,553	5,394	14,127	1,500,892	2.65	477	33.49c	70.93c
Asheville-Spartanburg	69.51	14,615	4,925	9,241	1,078,185	2.44	412	29.82c	66.30c
Spartanburg Columbia	96.70	10,990	4,933	7,458	917,526	5.46	881	23.93c	55.12c
Chattanooga-Memphis	315.07	10,937	4,197	6,988	827,067	3.34	434	29.51c	61.62c
Chattanooga-Macon	259.16	16,006	5,149	10,857	1,359,334	3.51	508	32.99c	67.60c

To state the operating efficiency results in another way: the unit cost for freight enginemen, trainmen and fuel per ton mile decreased 10.25 per cent. as compared with the previous year. The mileage of loaded freight cars increased 15.16 per cent., or, to state it differently, with an increase of 16.22 per cent. in freight revenue, the total freight-train car miles, loaded and empty, increased only 8.40 per cent., due to the fact that there was a decrease of empty freight car miles of 7.30 per cent. Freight locomotive fuel costs per 100 ton miles decreased 10.42 per cent. as compared with 1915, and 19.81 per cent. as compared with 1914, while pounds of coal consumed per 100 ton miles were 6.32 per cent. less in 1916 than in 1915 and 14.18 per cent. less than in 1914.

The problem of operating economy, and the method of solving it, are both reflected in the following comparative statistics:

	Freight Earnings.	Tractive Power of Freight Engines.	Freight Locomotive Miles.	Net Tons per Locomotive Mile.
1908.....	\$34,171,329.17	34,900	17,622,105	219.46
1916.....	47,020,481.81	38,112	14,366,475	414.84
Increase.....	37.60%	9.2%		89.03%
Decrease.....			18.47%	

Another important item of true economy has been the progressive control of charges for losses, damages and injuries, as illustrated by the following figures:

CHARGES FOR LOSSES, DAMAGES AND INJURIES, YEARS ENDED JUNE 30,

	1916.	1915.	1914.
Injuries to Persons.....	\$766,252	\$1,046,183	\$1,293,502
Loss and Damage—Freight....	844,965	962,070	1,072,628
Loss and Damage—Baggage....	6,248	5,926	10,617
Damage to Stock on Right of Way	128,889	155,164	159,186
Damage to Property.....	121,463	113,623	114,159
Totals	\$1,867,817	\$2,282,966	\$2,650,092

DECREASES:

1916 vs. 1915.....	\$415,149
1916 vs. 1914.....	\$782,275

These few figures are here cited, not only because they are striking, but because they indicate what has been accomplished by the intelligent work of the operating officers, plus the intelligent investment of capital in facilities for economical operation. Other examples of similar tendencies will be found elsewhere in this report. They are at once a source of pride and of stimulus to the management. They contain also one of two reasons for hope in the present parlous condition of the railway industry. The other reason is the progressive development of the volume of freight traffic, demonstrating what may be expected from what has been experienced.

MAINTENANCE:

The property has been well maintained, and its actual condition at the close of the year was better than ever it was. During the depression of last year a substantial item of retrenchment was the postponement of maintenance of freight-train cars which were then idle. On June 30, 1915, 11.65 per cent. of the freight-train cars owned by the Company were in bad order. During this year they were repaired, or, when found to be in such condition, due to age or damage, as not to warrant repair, were retired and charged off the books through the maintenance accounts. On June 30, 1916, there were only 1.58 per cent. of the freight-train cars owned by the Company in bad order.

TAXES:

There was a large increase in taxes. Of every dollar of revenue 4.17 cents went this year to taxes, as compared with 3.79 cents in 1914, when the revenues were substantially the same. It may be of interest to compare this tendency with that of another item of transportation cost over which earnest effort on the part of management can effect some control. This year all station expenses consumed 6 cents of each dollar of freight and passenger revenues as compared with 6.20 cents in 1914. Doubtless time was when the taxes assessed upon railroad property were, in fact, a contribution by railroad stockholders to government, as many taxing authorities believe they still are, but the fact is that, under regulation, railroad transportation has assumed such a public nature that to-day taxes have become only one of the costs of transportation service, and so are a tax upon commerce to be distributed among all those who use the railroads, directly or indirectly. It is almost as if a court-house was taxed for the support of the court.

GENERAL EXPENSES:

The cost, assigned by government authority, to this Company of the

Federal valuation of railroads now in progress added \$172,751.62 to the general expenses during the year, an increase of \$74,560.30 over the previous year, making the total of this cost to June 30, 1916, \$308,985.92. If this item of the technical account "General Expenses" is deducted, it will be found that the actual cost of administration of the property and traffic solicitation has been reduced six and one-half per cent. this year, as compared with last, and in greater proportion as compared with previous years.

CHARACTERISTICS OF TRAFFIC DURING A YEAR OF EXPANSION.

FREIGHT:

The forecast in the last annual report respecting freight traffic is happily sustained by the gross freight revenue increase for the year of \$6,561,623.96, equal to 16.22 per cent. Compared with the previous maximum, obtained in 1914, the increase in freight revenue is \$1,388,274.69, equal to 3.04 per cent. The total revenue producing tonnage of 30,272,132 tons exceeds that of the previous year by 4,375,720 tons (16.90 per cent.), and is 621,676 tons in excess of the previous maximum, obtained in 1914.

It is a common fallacy to assume that the success of a railroad in the South depends upon the tonnage of raw cotton carried. In the case of the Southern Railway this year the tonnage of cotton, and cotton seed and its products, actually decreased 239,416 tons (14.5 per cent.), due to the short crop, while the tonnage of all revenue freight increased 4,375,720 tons (16.9 per cent.).

Bituminous coal and coke tonnage was substantially the same as in 1914,

and included 126,189 tons passing over the new tipple at Charleston, which was put in operation September 2, 1915. But for the scarcity of vessels, and consequent high cost of ocean transportation, it is believed that this new business would have been of much larger volume. The present outlook warrants the belief that our bituminous coal traffic, both domestic and foreign, will rapidly expand, but the percentage of manufactured products handled may be expected always to exceed the coal tonnage. This is one of the characteristics of the Southern Railway which is also part of its operating problem, as already stated.

While we have not, in a large way, shared in the movement of munitions and supplies for the nations at war, we have handled a substantial tonnage of raw materials for the manufacture of munitions as well as some of the munitions.

The following condensed tonnage statement is an illustration of the traffic as well as the operating problem, and, in its balance between raw material, manufactured products and coal, indicates also the strength of the Company's claim to serve the South, and not merely any part or class of it.

	Per Cent. of Total Tonnage.
Manufactures and Miscellaneous	29.43
Bituminous Coal	28.60
Other Products of Mines	12.10
Products of Forests	16.90
Products of Agriculture	11.86
Products of Animals	1.11

A reconstruction of freight charges in the South, in conformity to the amended long and short haul requirement of the federal law, is in progress, under the direction of the Interstate Commerce Commission. The first tariffs, containing revised inbound rates, effective January 1, 1916, virtually eliminated the so-called "basing-point" system, under which some of the more important commercial centers of the interior South enjoyed lower rates from primary markets than were charged to the more numerous, but smaller, intermediate communities. While some of the larger communities which had enjoyed the benefit of the depressed rates feared the effects of the revision, there is no evidence, after a trial of more than six months, of injury to any industrial or commercial interest. It is believed that with the completion of this work of reconstruction, our people, as a whole, will be better satisfied than ever before with our system of rates.

Prospects are favorable for a healthy growth in all lines of freight traffic during the year 1917. The South has had a prosperous year, and intends to have another. As this report is written, there is apparent, throughout the South, that feeling of industrial and commercial exhilaration which comes to every Southern man, whether or not he owns any of the staple, with the exultant repetition of the phrase "fifteen-cent cotton."

PASSENGER:

The passenger revenues began showing gains in November, which have since continued, month by month, in amount more than sufficient to recover the losses in revenue occurring during the preceding four months of the year. While the passenger revenues have not yet returned to the highest record, which was made in the year 1914, it is expected that this may be accomplished within the year 1917.

As population multiplies in the territory served, so also do passenger revenues increase, but in greater proportion. For the period 1900 to 1910, the population of the States served by the Southern Railway increased 14.31 per cent. For the period 1910 to 1916, the population of those States increased 7.87 per cent. In the same periods our passenger revenue per mile of road increased 69.23 per cent. and 13.94 per cent., respectively.

The decrease in passenger train mileage this year, as compared with last, was due to rearranging service and taking off trains that did not pay the cost of operation.

As part of the consideration of passenger traffic, attention is called to the statement published this year for the first time, showing a division of expenses between freight and passenger traffic. From this it will appear that, while passenger trains earned an average of \$1.28 per mile run, the revenue from passengers, was substantially \$1.04 per train mile, and the cost to run a passenger train one mile was \$1.13, or approximately 9 cents per mile greater than the revenue derived from passengers. The prevailing passenger rates are not sufficient adequately to support the character of passenger service furnished to the public.

INDUSTRIAL AND AGRICULTURAL DEVELOPMENT OF THE TERRITORY SERVED.

MANUFACTURING:

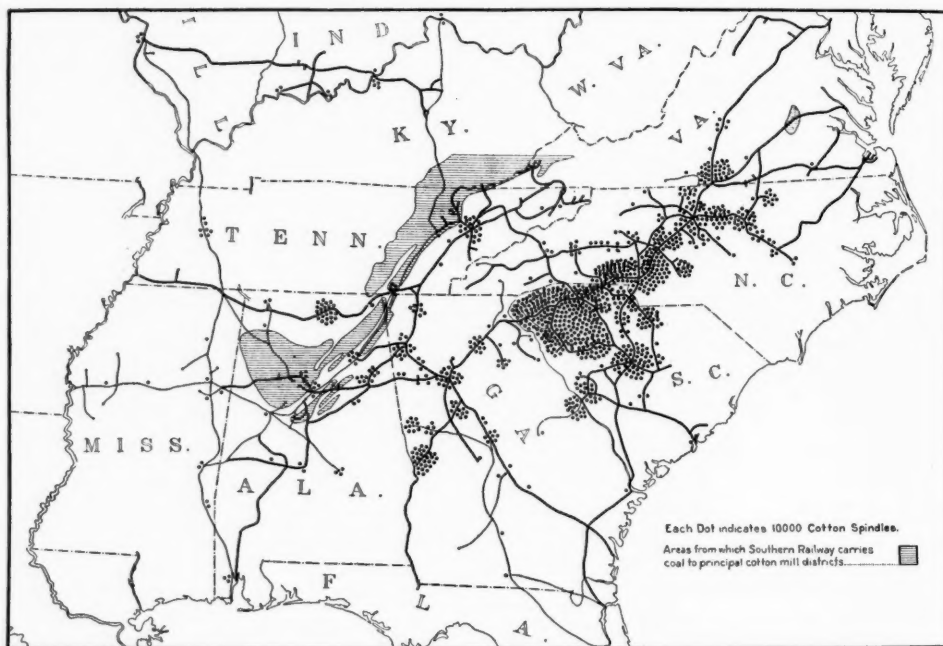
There has been, during the year, a steady growth in the number of manufacturing establishments in the territory served by our lines, and many additions have been made to previously existing plants. The development of the year has been through the continued healthy growth of those industries for which the South offers best opportunities. New plants completed during the year were as follows:

Brick, Tile, etc.	16
Canneries	9
Cheese Factories	8
Chemicals	14
Cotton Seed Products, Gineries, etc.	21
Creameries	6
Fertilizer	5
Flour and Feed	108
Furniture	12
Iron Products	24
Lumber	122
Power Developments	13
Stone, Coal, Mineral, etc.	61
Tanneries	7
Textile, Clothing, etc.	30
Woodworking	24
Miscellaneous	204
Total	684

The capital invested in these new industries is \$35,244,550. During the year there were additions made to 320 previously established manufacturing establishments, at a reported cost of \$16,888,950. Plants reported under construction on June 30, 1916, were eighty in number, with a capital of \$16,327,700. General improvements, consisting of new buildings of all kinds (except those used in manufacturing), public utilities, etc., cost \$67,548,640.

The United States census of manufacturing in 1914, the figures for which have recently been completed, shows that, in the five-year period covered by the census, the value of the products of manufacturing in the Southern States traversed by our lines increased 18.44 per cent., as compared with an increase of 17.20 per cent. in all other States.

A notable feature of Southern manufacturing development is the rate at which the consumption of cotton, one of the principal raw materials of the South, has increased in Southern mills. United States Census figures show that in the twelve months ended July 31, 1916, the mills of the South consumed 3,526,787 bales, as compared with 3,026,969 bales last year, an increase of 499,818 bales, or 16.51 per cent. The mills of all other States consumed 2,869,185 bales in the twelve months this year, as compared with 2,570,393 bales last year, an increase of 298,792 bales, or 11.62 per cent. Fully seventy-five per cent. of the cotton spindles of the South are in mills along the lines of Southern Railway Company and its associated companies. This important fact, and the actual number of spindles so located, are graphically illustrated by the following map of our lines:



AGRICULTURE:

As the opportunities for profitable farming in the South become better known, numbers of substantial farmers are attracted to locations along our lines, and our reports show 862 sales of farm lands on the Southern Railway during the year, of which 447 were sales to buyers from the North and West. These figures do not represent the total movement of northern and western farmers into the territory, but only those as to whom definite reports are available.

While fully maintaining their production of cotton, which must ever be the leading cash crop of a large part of the South, and their production of tobacco, which is the principal cash crop of some localities, Southern farmers are rapidly adopting systems of diversified farming and crop rotation with the raising of live stock, tending to increase the aggregate net income of the farm and to make the farmer more independent of the fluctuations in the market price of a single commodity. By the extensive growing of soil-building legumes, and by giving more attention to live stock, the productivity of Southern soils is being increased, with corresponding increases in the average yields per acre of cotton and other staple crops.

The outstanding feature of present-day agricultural development in the South is the growth of the live stock industry and the improvement in the quality of Southern farm animals. The longer grazing seasons of the South, and the great variety of forage crops that can be produced, give the South distinct advantages over all other parts of the United States for the production of meats and dairy products. The extent of these advantages is indicated by experiments made by the United States Department of Agriculture in the cost of raising beef cattle in the corn belt, in Pennsylvania, and in Alabama. It was found that the average cost per hundred pounds of raising a calf to the age of twelve to fifteen months was \$11.79 in the corn belt, \$7.24 in Pennsylvania, \$4.41 in North Alabama, and \$4.69 in West Alabama. The conditions under which the Alabama experiments were conducted are similar to those prevailing in a large part of the territory traversed by our lines. The rate at which the quality of Southern farm animals is being improved is indicated by the fact that 5,836 pure-bred cattle were placed on farms along our lines during the year. In the same period 1,243 silos were built along our lines.

Our reports show the planting of 2,886,000 apple, peach, Satsuma orange and other fruit trees along the Company's lines during the fiscal year.

During the year we continued our policy of co-operation with the State and Federal governments, agricultural colleges and Southern farmers for the development of agriculture along our lines. Active demonstration work was done on 1,075 demonstration fields, and our agricultural agents addressed 453 meetings of farmers during the year, with an attendance of 46,981. This Company was a pioneer in the South in work of that character; now, happily, the duty and the opportunity of such practical education have been largely assumed by federal authority, supplemented by many volunteer private agencies. Governmental agricultural demonstration has recently been extended, under the so-called "Smith-Lever Act," into most of the counties traversed by our lines. The turning of Southern farmers to diversification has, meanwhile, introduced serious market problems for the individual farmer. For these considerations, our organization engaged

GENERAL BALANCE SHEET, JUNE 30, 1916, COMPARED WITH JUNE 30, 1915.

TABLE 3.

ASSETS.				LIABILITIES.			
	JUNE 30, 1916.	JUNE 30, 1915.	INCREASE OR DECREASE.		JUNE 30, 1916.	JUNE 30, 1915.	INCREASE OR DECREASE.
INVESTMENTS:				CAPITAL STOCK:			
Investment in Road.....	\$330,204,269.48	\$323,835,721.06	\$6,368,548.42	Common	\$120,000,000.00	\$120,000,000.00	
Investment in Equipment..	65,518,515.58	68,656,135.26	—3,137,619.68	Preferred	60,000,000.00	60,000,000.00	
Total Investment in Road and Equipment	\$395,722,785.06	\$392,491,856.32	\$3,230,928.74				
Cash Deposited in Lieu of Mortgaged Property Sold Physical Property—Rails and Fixtures leased to others	.....	\$2,112,590.04	—\$2,112,590.04	Total Southern Rail- way Company Stock..	\$180,000,000.00	\$180,000,000.00	
	\$524,304.70	\$503,161.93	\$21,142.77	Southern Ry.-Mobile & Ohio Stock Trust Certificates..	5,650,200.00	5,650,200.00	
INVESTMENTS IN AFFILIATED COMPANIES:				Total Stock	\$185,650,200.00	\$185,650,200.00	
Stocks	\$26,736,304.49	\$26,704,106.32	\$32,198.17				
Bonds	28,021,459.04	28,015,459.04	6,000.00	LONG TERM DEBT:			
Notes	2,237,573.57	1,865,080.94	372,492.63	Funded Debt	\$226,850,500.00	\$226,844,500.00	\$6,000.00
Advances	1,999,719.29	2,163,429.30	—163,710.01	Equipment Trust Obligations	17,435,000.00	15,191,000.00	2,244,000.00
Miscellaneous (Matured interest coupons)	51,455.00	51,455.00		Total Long Term Debt..	\$244,285,500.00	\$242,035,500.00	\$2,250,000.00
Total Investments in Affiliated Companies.	\$59,046,511.39	\$58,799,530.60	\$246,980.79	Total Capital Liabilities..	\$429,935,700.00	\$427,685,700.00	\$2,250,000.00
OTHER INVESTMENTS:							
Stocks	\$1,695,693.58	\$996,879.79	\$698,813.79	GOVERNMENTAL GRANTS:			
Bonds	5,169,380.03	5,158,913.45	10,466.58	Grants since July 1, 1914, in aid of Construction..	\$31,668.16	\$13,378.25	\$18,289.91
Notes	63,909.42	52,625.82	11,283.60				
Advances for purchase of Additional Equipment.	5,633,029.65	.....	5,633,029.65	CURRENT LIABILITIES:			
Total Other Investments	\$12,562,012.68	\$6,208,419.06	\$6,353,593.62	Loans and Bills Payable...	\$455,000.00	\$455,000.00	
Total Investments.....	\$467,855,613.83	\$460,115,557.95	\$7,740,055.88	Traffic and Car Service Bal- ances	1,580,388.41	1,156,567.52	\$423,820.89
CURRENT ASSETS:				Audited Accounts and Wages	6,150,180.05	5,415,499.79	734,680.26
Cash	\$7,127,172.20	\$3,075,178.83	\$4,051,993.37	Miscellaneous Accounts ...	719,561.36	633,395.38	86,165.98
Time Deposit	1,906,448.05	2,126,700.63	—220,252.58	Interest Matured, including interest due July 1.....	2,818,680.65	2,740,952.65	77,728.00
Special Deposits	3,028,298.45	2,932,371.45	95,927.00	Funded Debt Matured—Un- paid	40,773.80	22,673.80	18,100.00
Loans and Bills Receivable	570,260.54	1,517,048.80	—946,788.26	Dividends Accrued—Unma- tured	56,502.00	56,502.00	
Traffic and Car Service Bal- ances Receivable	1,298,226.89	884,055.85	414,171.04	Interest Accrued—Unma- tured	1,572,760.05	1,578,496.72	—5,736.67
Balances due from Agents and Conductors	145,419.51	191,527.39	—46,107.88	Rents Accrued—Unmatured	203,404.12	249,266.09	—45,861.97
Miscellaneous Accounts Re- ceivable	4,533,206.69	3,207,412.32	1,325,794.37	Expenses Accrued not vouch- ered	647,908.80	564,335.45	83,573.35
Material and Supplies.....	6,813,172.27	4,530,946.24	2,282,226.03	Other Current Liabilities..	1,470,638.10	376,357.87	1,094,280.23
Interest and Dividends Re- ceivable	667,411.94	612,433.51	54,978.43	Total Current Liabili- ties	\$15,715,797.34	\$13,249,047.27	\$2,466,750.07
Other Current Assets.....	276,625.18	170,327.67	106,297.51				
Total Current Assets..	\$26,366,241.72	\$19,248,002.69	\$7,118,239.03	DEFERRED LIABILITIES:			
DEFERRED ASSETS:				Equipment of Leased Lines Retired; Deferred Pay- ments Account Reconstruc- tion Rogersville Branch; Contractors' Per Cents Re- tained and Sundry Items	\$1,449,254.66	\$1,385,586.66	\$63,668.00
Working Funds Advanced to Agents and Officers...	\$241,776.27	\$146,360.90	\$95,415.37				
Cash and Securities in In- surance Fund	1,133,469.42	954,979.63	178,489.79	UNADJUSTED CREDITS:			
Other Deferred Assets.....	183,992.19	235,228.19	—51,236.00	Taxes	\$1,051,619.99	\$1,011,687.22	\$39,932.77
Total Deferred Assets.	\$1,559,237.88	\$1,336,568.72	\$222,669.16	Insurance Reserve	1,133,469.42	954,979.63	178,489.79
UNADJUSTED DEBITS:				Operating Reserves	3,289,779.83	1,898,431.28	1,391,348.55
Insurance Premiums and Rents paid in advance...	\$13,243.96	\$11,809.10	\$1,434.86	Car and Ticket Mileage Sus- pense	700,219.12	557,821.07	142,398.05
Unextinguished Discount on Funded Debt (Proportion chargeable to Additions and Betterments to be made)	120,655.96	162,047.57	—41,391.61	Depreciation accrued on: Rail Leased to Other Companies	81,819.37	74,151.18	7,668.19
Additions and Betterments Expenditures in Suspense; Freight Claims in Sus- pense; Foreign Mileage Suspense and Sundry Items	2,848,803.56	2,283,665.64	565,137.92	Equipment Owned	15,472,168.77	15,333,948.50	138,220.27
Total Unadjusted Debits	\$2,982,703.48	\$2,457,522.31	\$525,181.17	Equipment Leased from Other Companies	244,196.99	255,061.24	—10,864.25
Securities of the Company held by it:				Sundry Items	559,276.05	144,607.81	414,668.24
Unpledged	\$13,403,200.00	\$16,108,200.00		Total Unadjusted Credits	\$22,532,549.54	\$20,230,687.93	\$2,301,861.61
Pledged	27,267,000.00	18,667,000.00					
Totals	\$40,670,200.00	\$34,775,200.00		CORPORATE SURPLUS:			
GRAND TOTALS	\$498,763,796.91	\$483,157,651.67	\$15,606,145.24	Additions to Property, since June 30, 1907, through Income and Surplus.....	\$790,020.62	\$577,519.68	\$212,500.94
				Appropriated Surplus not Specifically Invested	60,211.81	263,970.15	—203,758.34
				Total Appropriated Sur- plus	\$850,232.43	\$841,489.83	\$8,742.60
				PROFIT AND LOSS—Balance.	28,248,594.78	19,751,761.73	8,496,833.05
				GRAND TOTALS	\$498,763,796.91	\$483,157,651.67	\$15,606,145.24

in co-operative farm development work was, at the beginning of the present fiscal year, converted into an agency for finding profitable markets for farm products and for bringing producers and purchasers together. A special feature of this work, which is being carried on in co-operation with the Bureau of Markets and Rural Organization in the United States Agricultural Department, and with the agricultural agencies of the States, is the promoting of the organization of associations of small producers to sell together on a co-operative basis.

Good Roads:

Incomplete returns to the United States Office of Public Roads show that, during the calendar year 1915, 12,156 miles of improved country roads were built in counties traversed by Southern Railway lines, and that those counties issued bonds for road construction during the year aggregating \$9,026,200. The road and bridge taxes paid by this Company are a substantial contribution to this progress. For the calendar year 1915 such taxes amounted to \$485,524.35, equivalent to interest on \$8,092,000 of six per cent. county road bonds.

THE ADDITIONS TO CAPITAL ACCOUNT AND TO PROPERTY INVESTMENT.

No new railroad has been built or acquired. While the South undoubtedly needs additional railroads for its full development, there is now small public inducement held out to private initiative to assume the permanent responsibility of operation of a new railroad in territory where traffic must be created. Our use of new capital has been, for some years, devoted to a steady effort to control operating costs on our existing lines, and so, at once, to assure our security holders a return on the capital they have at risk, and to make our lines better instruments to serve the needs and the convenience of the people of the South. The results of this policy are beginning to be apparent in the control of expenses this year.

The investment in road increased \$6,368,548.42, representing net additions made during the year, exclusive of expenditures, amounting to \$2,556,361.67, for double track on the Atlanta and Charlotte Air Line Railway. This investment represents, as stated, betterments for greater economy and efficiency of operation. The investment in equipment account shows a decrease of \$3,137,619.68, brought about by the retirement of old freight cars which were in bad order and unprofitable to repair. The new equipment, to cost \$5,633,029.65, contracted for, but not delivered, during the year, is not yet included in this investment account. Further substantial additions to equipment should be made, during the coming year, to take care of an expanding traffic and to balance the hire of equipment account.

There was no increase in Mortgage Bonds outstanding. Equipment Trust Obligations increased \$2,244,000.

First Consolidated Mortgage five per cent. bonds in the amount of \$3,025,000 were sold and the proceeds applied to the redemption of \$1,925,000 of Columbia & Greenville First Mortgage six per cent. bonds, which matured on January 1, 1916, and \$1,100,000 Serial Mortgage six per cent. bonds of Virginia Midland Railway Company, which matured on March 1, 1916. These transactions resulted in no increase in the funded debt, while the difference in the interest rates borne by the old bonds and the new means a reduction of \$30,250 in the annual interest charges.

There were drawn and taken into the treasury, \$5,895,000 Development and General Mortgage four per cent. bonds. Of these bonds, \$5,000,000 were drawn, under the terms of the mortgage, for additions and betterments, and the remaining \$895,000 were drawn for the proportion charged to capital of certain equipment trust obligations paid during the year. The total amount of Development and General Mortgage four per cent. bonds available for disposition on June 30, 1916, was \$38,474,000, of which \$25,267,000 are pledged as collateral for notes, leaving \$13,207,000 of such bonds in the treasury.

There were issued \$5,000,000 one-year five and one-half per cent. notes, dated February 1, 1916, and the proceeds therefrom applied to the payment of the like amount of three-year five per cent. notes which matured February 1, 1916.

DOUBLE TRACK:

The double-track construction work on the main line north of Charlotte, N. C., carrying with it improved alignment and elimination of heavy grades, was completed during the year on 75 miles of the 115 miles of main line between Washington and Charlotte operated as single track at the beginning of the past fiscal year. The work on the remaining 40 miles is rapidly approaching completion, and the entire main line north of Charlotte should be in operation, as a double track railroad on revised grades, early in 1917. On the line between Charlotte and Atlanta, the double track work is nearing completion on the 56 miles between Spartanburg and Central, S. C., and on the 23 miles between Cornelia and New Holland, Ga., and is progressing on the 50 miles between Central and Cornelia and on the existing single track gauntlet of 5.5 miles between Suwanee and Duluth, Ga. Additional funds were made available for carrying on this work through the sale, in March, 1916, of \$7,000,000 First Mortgage thirty-year five per cent. bonds of The Atlanta and Charlotte Air Line Railway Company. The justification of the policy of double tracking the main line from Washington to Atlanta is seen in the fact that the entire 649 miles of this line earned this year well over \$25,000 a mile in revenue.

There were 491.42 miles of double track in operation at the close of the year, and 60.84 additional miles then completed but not in actual operation.

SERVICE OF EMPLOYEES.

During the year the organization of the officers and employees was knit closer than ever before. The confident claim that it is now an efficient organization, working smoothly and heartily together for a common purpose, seems to be justified.

Demands made on behalf of a comparatively small portion of the entire industrial army, in a nation-wide wage movement of train service employees, were apparently supported but half-heartedly, if at all, by our older men. What they would have done in case of a strike it is unnecessary now to conjecture, but it is apparent that they are greatly relieved that no decision was necessary, for, as good citizens, they felt keenly the many pronounced private and public manifestations of disapprobation of the attitude into which the leaders of their brotherhoods had put them. They are, and of right ought to be, a well paid, prosperous and contented class of hard working, self respecting, manly and efficient public servants. They are in no need of humanitarian sympathy, and they have the respect and esteem of their officers.

STORM DAMAGE IN JULY, 1916.

The property suffered severely from flood and storm at the beginning of the new fiscal year. On July 5th and 6th a tropical hurricane swept over the Gulf Coast region of Alabama. High winds along the coast reached a maximum of 107 miles per hour at Mobile, on the 5th, and for four days were followed by torrential rains over a large part of the State. Southern Railway water-front property at Mobile was badly damaged by wind and water, and traffic on our lines in Alabama, south and west of

Birmingham, was interrupted by the washing out of trestles and fills. Repair work was commenced at once, and on July 13th operation was resumed on the last line on which service had been so interrupted.

In the meantime, a second tropical storm developed in the Caribbean Sea and passed over Charleston during the morning of July 14th, causing some local damage. Moving northwest, it reached the Blue Ridge and there recurved to the northeast, passing up into Virginia with rapidly decreasing intensity. The full force of the storm was felt on the watershed in western North Carolina, where, at Alta Pass, on the border between McDowell and Mitchell counties, there was a rainfall of 22.22 inches in the 24 hours between 2 P. M. Saturday, July 15th and 2 P. M. Sunday, July 16th. This is the greatest 24-hour rainfall recorded in the United States. The streams, already bank-full from previous rains, were converted into floods, carrying down trees, houses, bridges and wreckage of all kinds, filling railroad cuts and washing out embankments, trestles and bridges. The Catawba River, draining east into the coastal plain, did the chief damage, sweeping away nine railroad and all of the highway bridges which spanned it. Among these were four principal main line bridges of this Company on the radiating Asheville, Charlotte, Columbia and Charleston divisions. The Yadkin River, also draining east, destroyed our North Wilkesboro line for 61 miles through the narrow valley traversed by its upper waters. The French Broad River, draining west through Asheville, wrought devastation upon the roadbed of our Asheville-Morris-town main line, which follows that river, but fortunately, our new concrete bridge at Asheville dammed the debris and held, thus protecting the several steel bridges lower down the river. In the western North Carolina mountains successive avalanches of the water soaked forest soil, facilitated by its large content of mica, swept away the roadbed, obliterating cuts and fills on both our principal trans-mountain lines. In all, 686 miles of our railroad in North Carolina, South Carolina and Tennessee were put out of service by this storm.

Never was the efficiency of the Southern Railway organization so strikingly demonstrated as in dealing with this emergency. Even before the extent of the damage was known, and while the rains were still falling, materials for repairs were gathered and despatched. Work went on night and day. Temporary crossings of the Catawba River were promptly effected, and the repair of roadway followed progressively. The last line to be opened was that between Asheville and Salisbury, where the damage was greatest, but even there through service was resumed on September 5th. Without taking into account the loss of traffic, and the cost of detouring trains, the total loss to the Company, on account of storm damage during the month of July, is estimated at approximately \$1,250,000.

DIVIDENDS.

The income return for the year has led many stockholders to expect an immediate resumption of dividends upon the preferred stock. Mindful of the just claims of the stockholders to share in the Company's prosperity as they have been compelled to suffer in the periods of its adversity, and fully conscious of the fact that the preferred stock dividends are not cumulative, the Board deems it proper to express a firm and deliberate conviction that the interests of the stockholders will be best served by continuing at this time the policy of conservation of the resources of the Company. When, through the strengthening of those resources and the solution of the problem of permanent financing of existing and future capital requirements, the payment of dividends can be once again confidently resumed, such distribution should reasonably be expected to continue without interruption by periods of temporary business depression. The Board believes that assurance of stability of income is of more real importance to the stockholders than a dividend at this time.

ACCOUNTS AND STATISTICS.

The accounts have been examined, as usual, by independent auditors and accountants, Messrs. Patterson, Teele & Dennis, and their certificate is made a part of this report.

Respectfully submitted, by order of the Board,

FAIRFAX HARRISON,

President.

TABLE 1.

INCOME STATEMENT FOR YEAR ENDED JUNE 30, 1916, COMPARED WITH YEAR ENDED JUNE 30, 1915.

	YEAR ENDED JUNE 30,		INCREASE OR DECREASE.
	1916.	1915.	
OPERATING REVENUES:			
Freight	\$47,020,481.81	\$40,458,857.85	\$6,561,623.96
Passenger	16,615,857.10	16,175,673.75	440,183.35
Miscellaneous Passenger-Train	368,411.29	353,842.55	14,568.74
Mail	1,458,879.37	1,459,883.47	—1,004.10
Express	2,037,282.86	1,688,471.19	348,811.67
Other Transportation	1,085,998.62	931,630.35	154,368.27
Incidental	1,055,146.52	884,531.81	170,614.71
Joint Facility	355,617.67	246,618.56	108,999.11
TOTAL OPERATING REVENUES.	\$69,997,675.24	\$62,199,509.53	\$7,798,165.71
OPERATING EXPENSES:			
Maintenance of Way and Structures	\$8,175,411.13	\$8,452,119.17	—\$276,708.04
Maintenance of Equipment.. ..	11,183,701.34	10,691,267.40	492,433.94
Traffic	1,904,129.24	2,110,466.58	—206,337.34
Transportation	22,751,698.00	22,757,597.47	—5,899.47
Miscellaneous Operations.....	404,167.81	388,228.83	15,938.98
General	2,038,702.18	2,019,621.01	19,081.17
Transportation for Investment			
—Credit	416,693.58	244,589.87	172,103.71
TOTAL OPERATING EXPENSES.	\$46,041,116.12	\$46,174,710.59	—\$133,594.47
NET REVENUE FROM OPERATIONS.	\$23,956,559.12	\$16,024,798.94	\$7,931,760.18
TAXES	2,916,426.65	2,595,828.27	320,598.38
UNCOLLECTIBLE REVENUES	36,127.38	28,916.09	7,211.29
TOTAL OPERATING INCOME.....	\$21,004,005.09	\$13,400,054.58	\$7,603,950.51

TABLE 1 (CONTINUED).
INCOME STATEMENT FOR YEAR ENDED JUNE 30, 1916, COM-
PARED WITH YEAR ENDED JUNE 30, 1915.

	YEAR ENDED JUNE 30,		INCREASE OR DECREASE.
	1916.	1915.	
NON-OPERATING INCOME:			
Joint Facility Rent Income...	\$290,695.07	\$284,477.24	\$6,217.83
Income from Lease of Road..	67,338.24	65,880.00	1,458.24
Miscellaneous Rent Income...	136,225.82	124,440.58	11,785.24
Net Income from Rail Leased	24,077.44	23,280.85	796.59
Dividend Income	1,271,256.09	1,080,243.89	191,012.20
Income from Funded Securities	1,106,342.69	1,071,544.35	34,798.34
Income from Unfunded Securities and Accounts	479,746.72	504,761.05	—25,014.33
Miscellaneous Income	46,344.02	84,289.79	—37,945.77
<hr/>			
TOTAL NON-OPERATING INCOME	\$3,422,026.09	\$3,238,917.75	\$183,108.34
<hr/>			
TOTAL GROSS INCOME.....	\$24,426,031.18	\$16,638,972.33	\$7,787,058.85
<hr/>			
DEDUCTIONS FROM TOTAL GROSS INCOME:			
Hire of Equipment—Balance..	\$679,354.69	\$837,616.06	—\$158,261.37
Joint Facility Rents.....	1,054,240.57	1,046,522.17	7,718.40
Rent for Leased Roads.....	1,778,527.90	1,621,040.59	157,487.31
Miscellaneous Rents	40,663.98	40,837.36	—173.38
Separately Operated Properties	189,317.85	183,608.84	5,709.01
Interest on Unfunded Debt...	623.59	2,294.52	—1,670.93
Miscellaneous Income Charges	143,175.16	154,681.56	—11,506.40
<hr/>			
TOTAL DEDUCTIONS OF THIS CLASS	\$3,885,903.74	\$3,886,601.10	—\$697.36
<hr/>			
TOTAL AVAILABLE INCOME.....	\$20,540,127.44	\$12,752,371.23	\$7,787,756.21

INTEREST ACCRUED ON FUNDED

DEBT	\$10,329,591.67	\$10,188,021.65	\$141,570.02
INTEREST ACCRUED ON EQUIP- MENT OBLIGATIONS			
650,629.16	737,784.54	—87,155.38	
DIVIDENDS ACCRUED ON SOUTH- ERN RAILWAY—MOBILE AND OHIO STOCK TRUST CERTIFI- CATES			
226,008.00	226,008.00		
TOTAL DEDUCTIONS OF THIS CLASS	\$11,206,228.83	\$11,151,814.19	\$54,414.64
BALANCE OF INCOME OVER CHARGES	\$9,333,898.61	\$1,600,557.04	\$7,733,341.57
APPROPRIATION OF INCOME FOR ADDITIONS AND BETTERMENTS..			
88,195.03	77,187.72	11,007.31	
BALANCE CARRIED TO CREDIT OF PROFIT AND LOSS.....	\$9,245,703.58	\$1,523,369.32	\$7,722,334.26

TABLE 2.

PROFIT AND LOSS, YEAR ENDED JUNE 30, 1916.

Credit Balance June 30, 1915.....	\$19,751,761.73
Add:	
Credit Balance of Income for the Year.....	9,245,703.58
Net Miscellaneous Credits	318,249.92
	\$29,315,715.23
Deduct:	
Discount on Securities charged off during the year	\$168,496.77
Property Abandoned and not Replaced.....	45,609.68
Advances to Proprietary Companies written down	853,014.00
	1,067,120.45
Credit Balance June 30, 1916.....	\$28,248,594.78

THE HOCKING VALLEY RAILWAY COMPANY—SEVENTEENTH ANNUAL REPORT

COLUMBUS, Ohio, September 21, 1916.

TO THE STOCKHOLDERS:

The Seventeenth Annual Report of the Board of Directors, for the fiscal year ended June 30, 1916, is herewith submitted.

The average mileage operated during the year was 350.7 miles, a decrease over the previous year of 1.0 miles. The mileage at the end of the year was 350.2 miles. See schedule on page 8.

RESULTS FOR THE YEAR.

Operating Revenues were.....	\$7,411,526.35
(Increase \$1,230,373.38 or 19.91%.)	
Operating Expenses were.....	4,953,576.89
(Increase \$769,206.89 or 18.38%.)	
Net Operating Revenue was.....	\$2,457,949.46
(Increase \$461,166.49 or 23.10%.)	
Taxes were	501,751.60
(Increase \$83,229.45 or 19.89%.)	
Operating Income, Taxes deducted, was.....	\$1,956,197.86
(Increase \$377,937.04 or 23.95%.)	
Miscellaneous Income was.....	962,440.54
(Increase \$669,549.76 or 228.60%.)	
	\$2,918,638.40
Rentals and Other Payments were.....	570,929.29
(Increase \$539,630.95.)	
Income for the year available for interest was.....	\$2,347,709.11
(Increase \$507,855.85 or 27.60%.)	
Interest (53.92% of amount available) amounted to.....	1,265,943.42
(Decrease \$80,507.46 or 5.98%.)	
Net Income for the year amounted to.....	\$1,081,765.69
(Increase \$588,363.31 or 119.25%.)	
Dividends paid during the year:	
Two dividends of 2% each, aggregating.....	439,980.00
Remainder	\$ 641,785.69

RETURN ON PROPERTY.

The following table shows the amount of return to your Company, from transportation operations only, upon its investment in road and equipment at the termination of each fiscal year of the five year period ended June 30, 1916:

YEAR ENDED JUNE 30:	PROPERTY INVESTMENT.	TOTAL OPERATING INCOME.	PER CENT. OF RETURN.
1916	\$44,960,442.81	\$2,806,638.19	6.24
1915	44,600,137.33	1,741,552.16	3.90
1914	44,441,150.66	1,926,037.53	4.33
1913	41,412,617.88	2,817,692.68	6.80
1912	40,541,201.96	2,739,094.06	6.76
Average	\$43,191,110.13	\$2,406,202.92	5.57

FINANCIAL.

The changes in funded debt shown by balance sheet of June 30, 1916, as compared with June 30, 1915, consisted in the retirement of \$5,000 par amount of The Hocking Valley Railway Company First Consolidated Mortgage 4½% Bonds through the sinking fund, in the annual payments of \$496,000 on equipment trusts, in the retirement of \$4,000,000 face amount one-year 6% gold notes by the issue and sale of \$4,000,000 face amount two-year 5% gold notes maturing November 1, 1917, and by the addition of \$220,000 face amount of equipment obligations in respect of two hundred 50-ton coal cars acquired.

An analysis of the property accounts will be found on pages 12 and 13, by reference to which it will be seen that additions and betterments were made during the year to the net amount of \$364,993.88, of which \$93,493.22 was added to cost of road, and \$271,500.66 was added to cost of equipment.

During the past seven years your Company's net addition to property accounts has been as follows:

Equipment	\$4,034,509.56
Additions and Betterments.....	2,685,656.04
	\$6,720,165.60

GENERAL REMARKS.

The equipment in service June 30, 1916, consisted of:

Locomotives owned	136	Decrease	12
Locomotives leased under equipment trusts.....	8	No change	
Total locomotives	144	Decrease	12
Passenger train cars owned.....	81	Decrease	5
Freight train and miscellaneous cars owned.....	9,744	Increase	64
Freight train cars leased under equipment trusts....	5,541	Increase	195
Freight train cars under special trust.....	47	No change	

Total freight train and miscellaneous cars..... 15,332 Increase 259

The changes during the year in accrued depreciation of equipment account were as follows:

Balance to credit of account June 30, 1915.....	\$1,227,429.08
Amount credited during year ended June 30, 1916, by charges to oper- ating expenses	\$218,330.31
Amount credited by adjustment of charges in 1909	6,538.25
	\$224,868.56

Charges to account for:

Accrued depreciation on equipment re- tired during year—	
12 locomotives	\$21,415.61
48 freight and work cars.....	4,202.03
5 passenger cars	1,289.30
Accrued depreciation on cars changed in class during year	974.93
	27,881.87
	196,986.69

Balance to credit of account June 30, 1916..... \$1,424,415.77

The business of your Company has not reached its previous record but has been good during the year as the facts given below indicate:

	1916.	1915.	INCREASE.
Operating revenues	\$7,411,526.35	\$6,181,152.97	\$1,230,373.38
Net operating revenue.....	\$2,457,949.46	\$1,996,782.97	\$461,166.49
Operating ratio	66.8%	67.7%	.9%*
Tons of revenue freight carried one mile	1,476,563,174	1,171,899,998	304,663,176
Revenue train load, tons.....	1,159	1,035	124
Revenue tons per loaded car..	39.1	37.0	2.1

*Decrease.

The construction of five additional 100-car tracks, and a 15-stall engine-house with other shop facilities, including shop tracks, in Parsons Yard at South Columbus is well under way, in order to provide necessary facilities for new business to be received from The Chesapeake and Ohio Northern Railway upon its completion. The capacity of the Toledo Dock Yard is being increased by the construction of twelve additional storage tracks. The light double track girder bridges over the Hocking River north of Lancaster and south of Sugar Grove were replaced by modern heavy bridges.

The revenue coal and coke tonnage was 8,351,853 tons, an increase of 33.2%; other revenue freight tonnage was 3,406,798 tons, an increase of 19.9%. Total revenue tonnage was 11,758,651 tons, an increase of 29%. Freight revenue was \$5,996,618.27, an increase of 22.1%. Freight train mileage was 1,273,552 miles, an increase of 12.5%. Revenue ton miles were 1,476,563,174, an increase of 26%. Ton mile revenue was 4.06

mills, a decrease of 3.1%. Revenue per freight train mile was \$4.709, an increase of 8.5%. Revenue tonnage per train mile was 1,159 tons, an increase of 12%; including Company's freight, the tonnage per train mile was 1,194 tons, an increase of 11.8%. Tonnage per locomotive, including Company's freight, was 1,016 tons, an increase of 10.2%. Revenue tonnage per loaded car was 39.1 tons, an increase of 5.7%. Tons of revenue freight carried one mile per mile of road were 4,210,331, an increase of 26.4%.

There were 1,785,343 passengers carried, a decrease of 1.4%. The number of passengers carried one mile was 44,537,880, an increase of .6%. Passenger revenue was \$861,174.21, an increase of 3.4%. Revenue per passenger per mile was 1.891 cents, an increase of 2.5%. The number of passengers carried one mile per mile of road was 126,997, an increase of .9%. Passenger train mileage was 705,252, a decrease of .5%. Passenger revenue per train mile was \$1.194, an increase of 3.6%; including mail and express it was \$1.364, an increase of 4%. Passenger service train revenue per train mile was \$1.428, an increase of 4.2%.

There were 2,143 tons of new 100-lb. rails, equal to 13.64 track miles, and 2,381 tons of new 90-lb. rails, equal to 16.84 track miles, used in the renewal of existing main tracks.

The average amount expended for repairs per locomotive was \$2,429.92; per passenger train car \$737.57; per freight train car \$66.36.

Appreciative acknowledgment is hereby made of efficient services during the year of officers and employees.

By order of the Board of Directors.

FRANK TRUMBULL,
Chairman.

GEO. W. STEVENS,
President.

TABLE 3.

GENERAL BALANCE SHEET, JUNE 30, 1916.

ASSETS.		LIABILITIES.	
PROPERTY INVESTMENT.		CAPITAL STOCK	\$11,000,000.00
Cost of Road.....	\$29,012,080.74	FUNDED DEBT.	
Cost of Equipment.....	14,741,228.11	First Consolidated Mortgage	
	\$43,753,308.85	4½% Bonds, 1999.....	\$16,025,000.00
SECURITIES OF PROPRIETARY, AFFILIATED AND CONTROLLED COMPANIES—PLEDGED.		First Mortgage C. & H. V.	
Stocks	\$108,088.66	R. R. 4% Bonds, 1948.....	1,401,000.00
Bonds	300,000.00	First Mortgage Cols. & Tol.	
	408,088.66	R. R. 4% Bonds, 1955.....	2,441,000.00
SECURITIES OF PROPRIETARY, AFFILIATED AND CONTROLLED COMPANIES—UNPLEDGED.		Two Year 5% Gold Notes, 1917	4,000,000.00
Bonds	\$150,000.00		\$23,867,000.00
Miscellaneous	37,752.00	Equipment Trust Obligations.	2,051,000.00
	187,752.00		25,918,000.00
OTHER INVESTMENTS.			\$36,918,000.00
Miscellaneous Investments—Securities—Pledged	1,928,950.00	WORKING LIABILITIES.	
	\$46,278,099.51	Loans and Bills Payable....	\$1,035,786.52
WORKING ASSETS.		Traffic Balances	662,296.71
Cash	\$948,309.47	Audited Vouchers and Wages	
Loans and Bills Receivable...	77,315.36	Unpaid	909,070.41
Traffic Balances	74,736.33	Miscellaneous Accounts Payable	81,873.00
Agents and Conductors.....	610,741.78	Matured Interest, Dividends and Rents Unpaid.....	370,588.00
Miscellaneous Accounts Receivable	350,894.07	Other Working Liabilities....	37,329.85
Other Working Assets.....	35,246.46		\$3,096,944.49
	\$2,097,243.47	DEFERRED LIABILITIES.	
Materials and Supplies.....	1,033,852.27	Unmatured Interest, Dividends and Rents Payable.....	\$132,776.96
SECURITIES IN TREASURY—UNPLEDGED.		Taxes Accrued	296,104.90
Stocks	501.00	Operating Reserves	23,319.78
DEFERRED ASSETS.		Accrued Depreciation—Equipment	1,424,415.77
Advances to Proprietary, Affiliated and Controlled Companies	\$55,548.51	Other Deferred Credit Items.	144,142.28
Advances, Working Funds....	1,161.15		2,020,759.69
Insurance paid in advance...	1,436.67		5,117,704.18
Cash and Securities in Sinking and Redemption Funds....	15.72	APPROPRIATED SURPLUS.	
Cash and Securities in Insurance Reserve Fund.....	40,083.80	Additions to Property through Income since June 30, 1907.	\$181,409.11
Other Deferred Debit Items..	31,034.58	Funded Debt Retired through Income and Surplus.....	131,331.90
	129,280.43	Reserve Invested in Sinking Fund	817.52
	3,260,877.17	Reserve Invested in Insurance Fund	40,083.80
Total	\$49,538,976.68	Appropriated surplus against contingent liability for freight claims	120,000.00
			\$473,642.33
		PROFIT AND LOSS—BALANCE....	7,029,630.17
			7,503,272.50
		Total	\$49,538,976.68

This Company and The Toledo & Ohio Central Railway Company severally endorsed, in 1901, upon 5% First Mortgage Bonds of the Kanawha & Hocking Coal & Coke Company due 1951 (\$2,842,000 outstanding) and, in 1902, upon 5% First Mortgage Bonds of the Continental Coal Company due 1952 (\$1,569,000 outstanding) purported guaranties thereof. In *quo warranto* litigation in Ohio, to which the bondholders were not parties, the purported guaranties of this company upon the bonds last mentioned have been declared *ultra vires* and the performance of the contracts pursuant to which both guaranties were made has been enjoined by the Federal Court in that State. The enforceability of these alleged guaranties by the bondholders is now in litigation.

WESTERN MARYLAND—SEVENTH ANNUAL REPORT

BALTIMORE, Md., October 18, 1916.

TO THE STOCKHOLDERS OF

THE WESTERN MARYLAND RAILWAY COMPANY:

The Seventh Annual Report of the operations of your Company, embracing the fiscal year ended June 30, 1916, is herewith respectfully submitted. The results of the operations for the year is reflected in the following condensed comparative statement:

	1916	1915.	Increase.
Miles Operated	688.59	661.23	27.36
Railway Operating Revenues..	\$10,930,369.09	\$8,683,458.96	\$2,246,910.13
Railway Operating Expenses..	7,039,608.19	6,257,412.21	782,195.98
Net Operating Revenue..	\$3,890,760.90	\$2,426,046.75	\$1,464,714.15
Railway Tax Accruals.....	\$348,740.00	\$306,000.00	\$42,740.00
Uncollectible Railway Revenue	420.51	858.59	Dec. 438.08
Operating Income	\$3,541,600.39	\$2,119,188.16	\$1,422,412.23
Miscellaneous Operations	70.02	Loss 930.31	1,000.33
Total Operating Income..	\$3,541,670.41	\$2,118,257.85	\$1,423,412.56
Other Income	312,892.64	268,865.97	44,026.67
Gross Income	\$3,854,563.05	\$2,387,123.82	\$1,467,439.23
Deductions from Gross Income	3,314,869.62	3,295,029.17	19,840.45
Net Income	\$539,693.43	Def.\$907,905.35	\$1,447,598.78
Operating Ratio	64.40%	72.06%	Dec. 7.66%

In connection with the above, the following remarks explain the increases and decreases:

MILEAGE:

Increase of miles operated from 661.23 to 688.59, or 27.36 miles, is in the following:

Nessle Branch—Charlton, Md., to connection with W. N. & M. Ry.	2.84
Williamsport, Nessle & Martinsburg Ry.—Connection with Charlton Branch to near Nessle. W. Va.....	.91
Somerset Coal Ry.—Coal Junction, Pa., to Gray, Pa.....	2.20
Rockwood Junction, Pa., to Coal Junction, Pa.—Trackage Rights over Baltimore & Ohio R. R.....	21.70

Less Adjustments	27.65
	.29
	27.36

OPERATING REVENUES:

Total Operating Revenues amounted to \$10,930,369.09, as compared with \$8,683,458.96 last year, an increase of \$2,246,910.13, or 25.88%. Of this increase \$827,271.01 resulted from coal shipments and \$1,232,339.83 from miscellaneous freight, or increases of 20.48% and 37.48%, respectively. Passenger revenue increased \$3,963.57, or 0.42%, and other revenue from passenger trains increased \$14,356.81, or 4.93%; a total increase of \$18,320.38, or 1.48%.

The increase in freight revenue to some extent reflects the prosperous condition of the country, but is likewise due to realization upon new constructions, which came into service during the year. The freight revenue accruing to this Company from the more important of the latter is as follows:

Port Covington Grain Elevator.....	\$413,923.10
Somerset Coal Railway.....	63,615.78
Nessle Branch	70,849.66
Total	\$548,388.54

Passenger revenue, which shows only a slight increase, following a decrease of \$73,038.21 in the preceding fiscal year, is still unsatisfactory, notwithstanding the fact that with permission of the West Virginia authorities, an increase from two to two and one-half cents per mile was authorized, approximating \$35,000.00 per annum. In the new fiscal year the passenger business is showing a gratifying increase.

OPERATING EXPENSES:

Total Operating Expenses amounted to \$7,039,608.19, compared with \$6,257,412.51 last year, an increase of \$782,195.98, or 12.50%.

Maintenance of Way Expenses amounted to \$1,269,244.85, compared with \$1,204,048.00, an increase of \$65,196.85, or 5.41%.

Improvement in track conditions continue, and the present maintenance program will insure a steady advance. Both ballast and new rail are being liberally applied.

Maintenance of Equipment Expenses amounted to \$1,736,704.49, compared with \$1,479,331.49, an increase of \$259,373.00, or 17.53%.

Locomotive mileage for the year increased 882,268, or 17.42%, and freight car mileage increased 19,611,323, or 26.72%.

Both locomotive and car repair conditions are normal.

Obsolete Equipment, consisting of 266 freight cars, 11 passenger coaches, 22 locomotives and 36 work cars, all of light capacity and not justifying repairs, were charged off during the year, resulting in a charge to Operating Expenses of \$109,451.15.

Traffic Expenses amounted to \$257,528.39, compared with \$260,135.68 last year, a decrease of \$2,607.29, or 1%.

Transportation Expenses amounted to \$3,452,852.33, compared with \$3,056,078.13 last year, an increase of \$396,774.20, or 12.98%. The transportation ratio was 31.59%, compared with 35.19% last year, a decrease of 3.60%. The revenue per freight train mile was \$4.20 compared with \$3.85 last year, an increase of \$0.35.

Constant attention is being paid to the important question of train loading, an additional advance from 735 to 837 revenue tons per freight train mile having been accomplished.

Miscellaneous Operations amounted to \$85,434.81, compared with \$38,045.95 last year, an increase of \$47,388.86, or 124.56%. The increase is due mainly to the operation of the Port Covington Grain Elevator, for which there was no corresponding item last year.

General Expenses amounted to \$245,436.29, compared with \$229,062.93 last year, an increase of \$16,373.36, or 7.15%.

The increase was principally occasioned by putting on office force to properly care for the increase in business, and the ever increasing requirements and demands of the Interstate and State Commissions.

The following important work, constituting additions, improvements and permanent betterments to the property, has been completed during the year:

Baltimore:	Alligator shears for cutting scrap.
Track facilities for U. S. Asphalt & Refining Company and the Prudential Oil Company at Curtis Bay.	Electric magnet separator.
Port Covington:	Concrete storage building.
Grain elevator.	Charlton:
Fire protection system for coal pier.	Track scales.
Strengthening transfer bridge.	Pearce:
Storage and train tracks, 3.5 miles.	Bunk house.
Green Spring:	Maryland Junction:
Connection with Pennsylvania Railroad.	Car repair yards.
Emory Grove:	Office building.
Rest room and additional bunks.	Rest room.
Westminster:	Cumberland:
Paving driveway to freight station.	Sidewalk on Market street.
Baltimore to Hagerstown:	Overhead track crane.
Strengthening bridges for operation of new mallet locomotives.	Glenville:
Telephone line.	Freight house.
Big Pool to Emory Grove:	Fowlesburg:
Automatic block signals.	Crossing bell.
Parkhead:	Hanover:
Overhead highway crossing.	Crossing bell.
North Junction to Lurgan:	York:
Anti-creeper.	Overhead track crane.
Hagerstown:	Tunnels:
Wagon scales.	Guard rails through all tunnels.
Excavating cut and track improvements west of Antietam street.	Rockwood Junction:
Paving on McPherson street.	Connection with Baltimore and Ohio Railroad.
Shops:	Westernport:
Additions to steam piping in power house.	Connection and interchange yard with Cumberland and Pennsylvania Railroad.
Commercial and industrial tracks were constructed at the following points:	Davis:
Asbestos,	Sidings for Mine No. 29.
Smithsburg,	Elkins:
Hagerstown,	Paving on Eleventh street.
York,	
	Parkhead,
	Oldtown,
	Sloan,
	Lonaconing,
	Woodmont,
	Ohio, Pa.,
	Stewarton,
	Shaw,
	Wallman.

TIE PLATES:

During the year 210,467 heavy tie plates were applied, at a cost for material and labor of \$34,506.10.

RAIL:

29.4 miles of new 90-pound rail were laid to replace worn rail and to provide relay rail for coal extensions and sidings.

BALLAST:

103,607 cubic yards of crushed rock ballast were renewed during the year.

AUTOMATIC BLOCK SIGNALS:

During the year automatic electric block signals were installed between Emory Grove, Md., and Hagerstown, Md., via Westminster; between Williamsport, Md., and Big Pool, Md., and between Colmar, Pa., and Connellsville, Pa., a total distance of 146 miles.

All single track on the main line, through Westminster, between Baltimore, Md., and Connellsville, Pa., is now protected by these signals.

NEW CONSTRUCTION:

Somerset Coal Railway Company.—This line from Coal Junction, Pa., was completed October 1, 1915, to Mine 123 of the Consolidation Coal Company, a distance of 2.2 miles, and is being extended to Mine 125, an additional distance of 2.4 miles.

Mine 123 is being developed, and has encountered some difficulties, which are being overcome, and which account for the light production of 61,896 net tons to June 30, 1916.

Mine 125 has three openings and will develop more rapidly. The tracks to this mine were completed in September, 1916.

Fairmont Helen's Run Railway Company.—The line has been completed from Chiefton, W. Va., to Idamay, a distance of 4.85 miles, with a branch, 1.86 miles in length, to Carolina, at each of which places the Consolidation Coal Company has installed thoroughly modern steel tipples with concrete lined shafts. Coal produced will be of the best grade of Fairmont gas coal. These two mines will ultimately have an annual capacity of 1,000,000 tons. Their output during development and for the calendar year 1917 should be from 250,000 to 300,000 tons.

Fairmont Binghamon Railway Company.—This line, 8.0 miles in length, is under construction and the grading should be completed by January 1, 1917. There will be some delay in securing the material for the steel bridges, but it is hoped to have the road in operation early in 1917.

This branch will serve three openings at Wyatt, W. Va., belonging to the Consolidation Coal Company, which will deliver their output through one tippie, permitting a very economical switching operation. These will be slope openings on the outcrop, and will permit of rapid development. The output should reasonably reach 300,000 tons in 1917, and when fully developed will produce 1,500,000 tons per annum.

Nessle Branch.—Mention was made in the last annual report of the completion of this branch from Charlton to the south bank of the Potomac River, 2.84 miles, and which was opened for operation July 7, 1915. At this point connection is made with the Williamsport, Nessle & Martinsburg Railway, from which, during the year under review, 212,284 net tons of limestone have been received for delivery to furnaces in the Pittsburgh District.

Double Track.—The very large increase in business, and the hopeful prospect of a continuance, has emphasized the necessity for additional double track, particularly in the territory between Big Pool and Highfield. Work under progress at the close of the fiscal year, providing a second track from Edgemont to Pen Mar, a distance of 3.52 miles, was completed and put in operation October 1, 1916. The construction of a second track from the Hagerstown passenger station to Security, 2.4 miles, and from Big Pool to Clearspring, 5.62 miles, is now under way, and these additional facilities should be available by January 1, 1917.

FINANCES:

Floating indebtedness amounting to \$1,200,000 represented by notes of \$400,000, \$300,000 and \$500,000, due September 1, 1916, December 1, 1916, and March 1, 1917, respectively, was added to the Company's liabilities

during the year. This amount was applied: to the construction of grain elevator at Port Covington \$681,228.59; to Additions and Betterments Railway Properties \$483,246.78; Coal Properties \$35,524.63. Equipment Trust obligations amounting to \$249,205 were paid during the year, leaving \$203,500 unpaid of said obligations, outstanding at June 30, 1915. There was issued during the year \$450,000 of 5% notes to cover purchase of 15 mallet compound locomotives and \$2,003,638.14 of 5% notes (interest included in notes) to partially cover purchase of 2,000 all-steel Hopper Cars.

The obligations for installation of block signals between Cumberland, Md., and Big Pool, Md., amounting to \$120,000, were paid off. For installation of block signals between Colmar, Pa., and Greenwood, Pa., obligations were incurred amounting to \$67,088, payable in 60 monthly installments.

FINANCIAL READJUSTMENT:

Your Board has had under consideration, during the year, plans for the readjustment of the Company's finances. The interest upon the \$10,000,000 of secured notes and \$6,000,000 unsecured notes has remained unpaid since January 1, 1915, and the principal of these notes, due July 1, 1915, also remains unpaid, although the interest has been accrued and charged to income in the Company's accounts.

The improvement of the Company's affairs, reflected in the last year's operation will, it is hoped, facilitate the consummation of a plan, at a reasonably early date, to which the assent of the Noteholders' Committee can be secured.

GENERAL:

The Port Covington Grain Elevator was opened for operation December 15, 1915. The amount of grain handled and the resulting traffic has been very encouraging. To enable your Company to handle an increased grain business, an addition to the elevator was constructed, which increased the capacity from 900,000 bushels to 1,900,000 bushels. The additional facilities were available September 20th, 1916. In the six and one-half months of the past fiscal year during which the elevator was in operation 14,965,740 bushels of grain were received, representing the contents of 10,448 cars and 33 small bay boats. 127 vessels were loaded at an average of 112,248 bushels per vessel.

CONCLUSIONS:

The progress of your Company during the past year has been consistent, and it is pleasing to report that even a higher level of earnings is being returned in the new fiscal year.

The results attained have been through the loyal co-operation and efficiency of the officers and employees of your Company, which the Board gratefully acknowledges.

By order of the Board of Directors.

CARL R. GRAY,
President.

STATEMENT NO. 2.

COMPARATIVE INCOME ACCOUNT FOR THE YEARS ENDED JUNE 30, 1916, AND 1915.

	1916.	1915.	Increase.
RAILWAY OPERATING INCOME:			
Rail Operations:			
Operating Revenues	\$10,930,369.09	\$8,683,458.96	\$2,246,910.13
Operating Expenses	7,039,608.19	6,257,412.21	782,195.98
Net Operating Revenue ..	\$3,890,760.90	\$2,426,046.75	\$1,464,714.15
Tax Accruals	\$348,740.00	\$306,000.00	\$42,740.00
Uncollectible Railway Revenues	420.51	858.59	Dec. 438.08
Total Tax Accruals, etc..	\$349,160.51	\$306,858.59	\$42,301.92
Operating Income	\$3,541,600.39	\$2,119,188.16	\$1,422,412.23
Miscellaneous Operations	70.02	930.31*	1,000.33
Total Operating Income.	\$3,541,670.41	\$2,118,257.85	\$1,423,412.56

* — Loss.

OTHER INCOME:	1916.	1915.	Increase.
Joint Facility Rents	\$22,929.99	\$19,795.23	\$3,134.76
Miscellaneous Rents	14,356.43	19,454.14	Dec. 5,097.71
Miscellaneous Nonoperating Physical Property	573.20	864.34	Dec. 291.14
Net Income from Coal Companies and Miscellaneous Properties	205,145.35	192,421.28	12,724.07
Income from Funded Securities	47,100.00	8,091.67	39,008.33
Income from Unfunded Securities and Accounts	11,092.20	10,228.60	863.60
Income from Sinking Fund..	1,690.22	593.76	1,096.46
Interest on Advances to Subsidiary Companies:			
For Construction	9,970.25	6,518.74	3,451.51
For Expenditures for Additions and Betterments ..	.....	10,898.21	Dec. 10,898.21
Miscellaneous Income	35.00	.....	35.00
Total Other Income	\$312,892.64	\$268,865.97	\$44,026.67
Gross Income	\$3,854,563.05	\$2,387,123.82	\$1,467,439.23
DEDUCTIONS FROM GROSS INCOME:			
Hire of Equipment	\$74,831.08	\$144,363.00	Dec. \$69,531.92
Joint Facility Rents	82,870.05	79,466.68	3,403.37
Rent for Leased Roads	121,566.50	121,566.50	.....
Miscellaneous Rents	21,343.88	3,358.21	17,985.67
Interest on Funded Debt	2,685,514.10	2,677,871.30	7,642.80
Interest on Unfunded Debt..	304,254.41	186,337.52	117,916.89
Amortization of Discount and Commission on Funded and Unfunded Debt	17,074.91	74,970.48	Dec. 57,895.57
Miscellaneous Income Charges	7,414.69	7,095.48	319.21
Total Deductions	\$3,314,869.62	\$3,295,029.17	\$19,840.45
Surplus for Year	\$539,693.43	.....	\$1,447,598.78
Deficit for Year .....	.....	\$907,905.35	.....

STATEMENT NO. 3.

SYSTEM PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED JUNE 30, 1916.

DEBIT BALANCE JUNE 30, 1915		\$3,148,064.28
CREDIT BALANCE TRANSFERRED FROM INCOME ACCOUNT	\$539,693.43	
UNREFUNDABLE OVERCHARGES	642.15	
UNCLAIMED VOUCHERS AND PAY CHECKS.	2,436.06	
MISCELLANEOUS CREDITS	2,137.78	
SURPLUS OF PROPRIETARY AND CONTROLLED COMPANIES:		
Sinking Fund Accretions:		
The Baltimore & Harrisburg Railway Co. (Western Extension)	\$2,005.67	
Baltimore & Cumberland Valley Railway Company	1,837.77	
The Baltimore & Cumberland Valley Rail Road Company	899.91	
	4,743.35	
	\$549,652.77	
LESS:		
LOSS ON RETIRED ROAD AND EQUIPMENT	\$6,916.76	
ACCOUNTS WRITTEN OFF	223.19	
MISCELLANEOUS DEBITS	466.46	
	7,606.41	
		542,046.36
DEBIT BALANCE JUNE 30, 1916		\$2,606,017.92

STATEMENT NO. 4.

SYSTEM BALANCE SHEET AT JUNE 30, 1916.

ASSETS.		LIABILITIES.	
PROPERTY INVESTMENT:		CAPITAL STOCK:	
Cost of Properties Owned, including Coal and Other Properties	\$115,821,685.39	Common	\$49,429,198.40
Securities of Other Companies—pledged..	400,000.00	Preferred	10,028,000.00
	\$116,221,685.39		\$59,457,198.40
CURRENT ASSETS:		MORTGAGE, BONDED AND SECURED DEBT:	
Cash	\$729,220.16	Funded Debt	\$50,293,700.00
Loans and Bills Receivable	1,572.04	Collateral Trust and Other Notes	13,000,000.00
Traffic and Car Service Balances Receivable	980,342.75	Equipment Trust Obligations	2,657,138.14
Net Balance Receivable from Agents and Conductors	161,055.63	Automatic Block Signal Obligations	67,087.80
Miscellaneous Accounts Receivable	668,542.53		66,017,925.94
Material and Supplies	1,025,724.10	CURRENT LIABILITIES:	
Other Current Assets	17,815.76	Loans and Bills Payable	\$4,985,000.00
	3,584,272.97	Traffic and Car Service Balances Payable..	388,228.30
DEFERRED ASSETS:		Audited Accounts and Wages Payable	1,169,329.10
Working Fund Advances	3,095.25	Miscellaneous Accounts Payable	105,664.83
UNADJUSTED DEBITS:		Interest Matured Unpaid	1,853,725.00
Insurance Premiums Paid in Advance	\$14,991.38	Funded Debt Matured Unpaid	8,000.00
Unextinguished Discount on Securities:		Unmatured Interest Accrued	498,347.97
Discount on Capital Stock	\$12,734,835.00	Unmatured Rents Accrued	3,677.39
Discount on Funded Debt	562,515.43	Other Current Liabilities	22,641.96
	13,297,350.43		9,034,614.55
Other Unadjusted Debits	651,163.95		28,124.75
	13,963,505.76	DEFERRED LIABILITIES	
PROFIT AND LOSS	2,606,017.92	UNADJUSTED CREDITS:	
Total	\$136,378,577.29	Tax Liability	\$279,354.64
		Operating Reserve	108,968.17
		Accrued Depreciation—Equipment	1,059,637.03
		Other Unadjusted Credits	208,762.14
			1,656,721.98
		APPROPRIATED SURPLUS:	
		Additions and Betterments to Property Through Income	183,991.67
		Total	\$136,378,577.29